AMERICAN GAS ASSOCIATION MONTHLY

Vol. II No. 3

March, 1920

"The Rising Tide Lifts All the Boats."

When the tide of public opinion
swells through recognition
of service well performed,
all our boats will be lifted.

ENTERED AS MATTER OF SECOND CLASS AT THE POST OFFICE, EASTON, PA.
Acceptance for Mailing at Special Rate of Postage Provided for in Section 1103, Act of October 3, 1917, Authorized July 16, 1918

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FOR STATEMENTS AND OPINIONS CONTAINED IN PAPERS AND DISCUSSIONS APPEARING HEREIN, THE ASSOCIATION DOES NOT HOLD ITSELF RESPONSIBLE

AMERICAN GAS ASSOCIATION MONTHLY

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AMERICAN GAS ASSOCIATION

MONTHLY

ADDRESS ALL COMMUNICATIONS TO THE AMERICAN GAS ASSOCIATION, Inc.
130 E. 15th St., NEW YORK, N. Y.

Vol. II MARCH, 1920 No. 3

WITH THE EDITOR.

A Popular Revival

The Question Box—an old friend is to be with us again. In the January issue the Accounting Section, through its Committee on State Representatives, announced the revival of the Question Box, so far as accounting questions were concerned.

To expedite cooperation between member companies State representatives of the Accounting Section were organized as a Committee under the chairmanship of Mr. J. W. Heins and the answers to several accounting questions secured through the Committee appear in this issue.

A recent recommendation of the Industrial Fuel Sales Committee, of which Mr. H. H. Clark, Jr. is the Chairman, calls for a section of the MONTHLY devoted to "Questions and Answers" on industrial fuel problems, with the support of the Committee pledged to making this medium for the exchange of useful information a practical help to industrial fuel men.

These two movements, initiated almost simultaneously in two different sections of the Association indicate a general desire for the resumption of the service carried on in the past through the question boxes of the former A. G. I. NEWS and N. C. G. A. BULLETIN.

To date the A. G. A. has answered all inquiries received directly by correspondence from the information in the headquarters' data files or through reference to Association committees. With this issue, however, we are inaugurating a general question box in which the answers to questions which are of general interest will be published for the benefit of our membership. Our members are invited to submit answers to the questions listed. The Question Box will prove a popular revival and its scope will extend to all phases of the industry. It is now declared open. *Let the questions come.*

The Petroleum Situation

Recently we heard the statement made that within another twelve months the country would probably be confronted by an unprecedented shortage of petroleum and that not only might prices be expected to go well above their present level, but that it might prove difficult to get oil at any price. We asked Dr. Van H. Manning, Director of the Bureau of Mines, if he regarded this forecast as well founded, and requested him to give us any information regarding the oil situation which would be of interest to our members. There is perhaps some comfort in his reply, which follows:

"I am inclined to believe that the information you have received regarding the alarming shortage in fuel oil by the end of this year, is unjustifiably pessimistic. It is, of course, very difficult to forecast the production of crude oil even from one year to the next, but it is not likely that the situation will become as acute as this rumor within such a short time. One of the causes for apprehension has recently been removed; that is, the Mexican Government has granted temporary permits for the drilling of new wells in Mexico, which will do much to assure supplies from this source.

"I may say that there is being developed a considerable demand for fuel oil and gas oils and it would not be surprising if the present upward tendency in the price of fuel oils continued throughout this year. I do not make this as a prediction, however, as there are so many variables affecting the oil industry that no such predictions are warranted."

Membership

The February issue of the MONTHLY announced the plans for the campaign to increase the membership of the Association. With this campaign only barely under way, the results more than justify faith in its success. The old query "What do we get for it?" is heard less frequently when the argument for membership is advanced, and there are encouraging signs that point to the belief that the value of a practical central organization is becoming generally recognized by the gas industry. It must be equally patent that such an organization will increase in effectiveness as its support increases and by this we mean not only financial support, but the equally important support of an interested membership, representative of the gas business of the United States, both as to numbers and broad distribution.

AMERICAN GAS ASSOCIATION MONTHLY

Vol. II MARCH, 1920 No. 3

The Future of the Gas Industry Full of Promise

H. O. LOEBELL

THE Gas Industry today is probably the most promising manufacturing industry. The fact that the product is known and preferred by everyone using fuel in the home or the factory is conclusive evidence of its desirability.

The handicaps of the gas manufacturing business in the past have been practically overcome, and the normal demand for so desirable a commodity is surely going to tax the resources of men capable of developing the business.

The premium that metallurgical and other industries are ready to pay for the development of a process which will transform into a gaseous fuel and solve permanently and economically their heating processes, the gradual increase in the price of fuel oil and its scarcity, the decline in supply of natural gas in the large industrial centers, the wonderful increase in economic value obtained by substituting gas for coal and other solid fuel in homes and the elimination of the nuisance of fire-making, clinker-cleaning, ash-handling, and so forth, are some of the reasons why the industry is bound to grow and take its logical place among the greatest manufacturing industries of today.

The gas industry is not new. Its past expansion and growth have not been such as to justify anyone in becoming very enthusiastic over the opportunities it offers; but the obstacles that have delayed its progress for all these years are being eliminated. New inventions in manufacturing processes and new utilization methods are being introduced. The industry is just adjusting itself to fulfill its true role and scope in present day endeavors. Those who have been leaders and have been actively engaged in the development of the gas business and are acquainted with its progress are alarmed at the scarcity of men qualified to introduce, expand and operate this new business. They fear that the economical value and the desirability of this new development in the gas industry is so great that it will be impossible to cope with it. The need right now is for *more men*—men with energy and ambition!—men with vision and imagination, who are willing to chance their futures in this most promising and far-reaching development.

Eighty Cent Gas Rate Enjoined by United States Court

A preliminary injunction was obtained on February 10th, from Federal Judges Ward, Mayer and Knox, by the Brooklyn Union Gas Company restraining State and Municipal authorities from enforcing the eighty-cent gas law. The injunction is to continue until August 1st, when it may be extended if the Company's suit to have the statutory rate declared unconstitutional on the ground that it is confiscatory is not decided by that date.

The Court holds that the company has not earned a fair return, and its opinion in this connection reads—"While upon the other affidavits submitted it is impossible to state accurately the amount of capital invested and the cost of manufacturing and distributing the gas sold, we are convinced that there was no fair return in 1918 on the plaintiff's capital invested, and that in 1919 there was no return at all."

This action enables the company to immediately put into effect a new rate to be approved by the Court, which will net a fair return on the investment—the difference between the new price and the old rate to be deposited and returned to the consumer if the company loses its suit and the Eighty-cent law is held to be constitutional.

The Court stated that the penalty for violation of the Eighty-cent law was so great as to threaten annihilation, which was of itself unconstitutional, and that the plea of the Public Service Commission that the action should be dismissed because the plaintiff did not come into Court with clean hands, because it sold gas of less than the candle-power fixed by law, should not be considered, because this alleged violation was due to the fact that the Government had decreased the candle-power by abstracting from the gas toluol needed for war purposes. Strikes of boatsmen in New York harbor further prevented the company from getting as much oil as was required.

Protests Gas Coal Diversions

The action of the Central Coal Committee in shutting off exports from northern West Virginia and diverting export gas coal to eastern domestic plants at the flat government price is meeting with bitter opposition from the operators in the Fairmont field. George T. Bell, executive vice-president of the Northern West Virginia Coal Operators' Association, has protested against the practice to Chairman Spencer of the Central Coal Committee in the following telegram:

> On behalf of all operators in the Fairmont field the association desires to enter its emphatic protest against your committee's action in shutting off the most lucrative business of our exporting members and jeopardizing the car supply of this region for the financial benefit of a few gas companies. If any gas companies need fuel, we have absolutely no objection to your committee to divert our coal to them; but we do most earnestly object to your whittling down our prices for their benefit. As we view matters it is simply a question whether gas consumers or gas coal producers are entitled to the difference in the prevailing prices for export and domestic coal. We contend that coal producers are entitled to the difference, particularly as they have just made a 14 per cent. increase in wages and that they need the money to keep their mines running. One of the principal considerations which led operators to grant an increase in wages before the expiration of their contracts with the miners was the assurance given by former Fuel Administrator Garfield that all orders regarding prices and movements of coal would be abrogated when the mines resumed operations to the extent of 70 per cent. of normal. Your action places the government in the position of penalizing the coal operators both coming and going, viz.: increasing their costs and at the same time decreasing their revenues.—*Coal Trade Journal.*

The Candle Power Standard a "Crime"

THE following from the *New York Times*, February 9th needs no comment from us:

> The recent decision of Justice Greenbaum, in the Supreme Court, that gas companies must obey the law in the matter of furnishing their consumers gas of 22 candle power if they hope to have any standing in the courts, and the opinion of Corporation Counsel Burr that consumers paying the full legal price for less than 22 candle power gas would be able to enforce collection of the difference have evoked a statement from the Consolidated Gas Company that the British thermal unit standard had taken the place of the candle power standard pretty generally throughout the United States, Canada and Europe.
>
> In an effort to prove that the candle power standard has ceased to be serviceable to the consumer, an abstract is offered of testimony taken before Special Master Abram S. Gilbert in the company's suit to have the 80-cent law declared unconstitutional. One of the witnesses was Archibald S. B. Little, chief gas engineer of the Illinois Public Utilities Commission, who qualified as an expert and who stated that he was the pioneer in the substitution of the modern heat unit standard for candle power requirements. He called the old system "a crime."
>
> Questioned by William L. Ransom, counsel for the company, Mr. Little said that the British thermal unit standard had been substituted for the candle power, and then the record shows the following questions and answers:
>
> Q. Is it your judgment that this candle power standard is a wrong standard?
>
> A. Certainly.
>
> Q. And it adds greatly to the cost of making gas without corresponding advantage to the consumers?
>
> A. Correct. The consumers cannot get the advantage out of the gas at 22 candle power.
>
> Mr. Little said that his opinion agreed with that of gas engineers generally throughout the United States. Then Mr. Gilbert said:
>
> "I am inclined to say something in my report on that point. I think it is pretty nearly time a stupid standard of that kind is eliminated, if everybody agrees to it."
>
> Mr. Gilbert then asked the witness:
>
> "But there would be an advantage to the public in getting a British thermal unit standard rather than the candle power standard?"
>
> "Yes," was the reply, "it would be more to their advantage in New York City because you cannot make effective use of 22 candle power gas or any other gas at the ridiculously low pressure that this company is forced to carry in its mains."
>
> "Is it not a fact that so far as you know the only persons who could be interested in making the 22 candle power standard would be the oil companies?" the witness was asked.
>
> "They started it and they are keeping it up; there is no question about that at all," was the reply.
>
> Following the abstract from the record, the Consolidated says:
>
> "The gas companies operating in New York City are still handicapped by the statutory obligation to work under the old candle power standard. In England a moderate calorific standard has been in vogue for some years. In the more progressive States and cities in this country the heat unit standard is rapidly receiving the sanction of the public authorities, and it is to be hoped that in the near future a change from a candle power to a calorific standard will be authorized for New York."

BINDERS FOR YOUR MONTHLY

Every member should keep a complete file of the MONTHLY on his desk. Attractive binders for this purpose may be secured from association headquarters for $1.25 each.

lders Not a Menace

THE Special Report of the Board of Gas and Electric Light Commissioners (Mass.), relative to the Storage of Illuminating Gas in the City of Boston and dated January, 1920, is a document of considerable interest. In the legislative session in 1919, a resolution was adopted directing the Board of Gas and Electric Light Commissioners to "inquire into the subject matter of house bill numbered twelve hundred and ninety-one and to report the results of its investigation, with recommendations of such legislation as it may deem expedient."

House Bill No. 1891, the subject of this inquiry, provided—

SECTION 1. It shall be unlawful to maintain or operate a gasometer wherein illuminating gas is preserved, kept or stored within one hundred rods of a dwelling house in the city of Boston.

SECTION 2. Any person, firm or corporation who violates the provisions of section one shall be punished by a fine of one thousand dollars for each day that such violation continues.

SECTION 3. Whoever suffers injury or damage by the maintenance of a gasometer contrary to the provisions of section one may recover damages therefor in an action of tort against the person, firm or corporation violating said provisions.

The result of the Board's inquiry is given in full in the report referred to. It appears that the Bill was prepared and submitted by the residents of the North End, with the specific purpose of eliminating the North End holder, but the proposed act applied to other holders as well.

The Board found that the proposed legislation was inexpedient and stated its conclusions thus:

> The gas holders now standing within the limits of the city of Boston, and particularly the North End holder, are lawful structures. A gas holder properly designed, constructed and operated is not per se a menace to the public safety and health, even though located in a thickly settled community such as the North End. The Laws now in force requiring permits and prescribing suitable safeguards for the structural safety of gas holders hereafter erected are ample. The use to which a holder is put is such as to involve little likelihood of developing structural weaknesses and possible danger to the public safety or health.
>
> So far as gas holders in use may become a nuisance or a menace to the public health, the board of health, as already indicated, has full power to deal with the situation and in addition any party injured has his remedy at law for damages or in equity to enjoin the nuisance. A gas company cannot be deprived without compensation of the beneficial use of a gas holder merely on aesthetic grounds or for the improvement of the neighborhood in which it stands.
>
> In view of all the facts the Board deems that the proposed legislation is inexpedient.

Prohibition

The meter department say it is a good thing, but that it blocks the way to a great many of our meters.

Public Service Sales Bulletin

GENERAL

CHAIRMEN OF GENERAL COMMITTEES ORGANIZED TO DATE

National Bureau of Standards (Advisory Committee)—O. H. FOGG, New York, N. Y.
Beal Medal—GEO. B. CORTELYOU, New York, N. Y.
Accident Prevention—JAMES B. DOUGLAS, Philadelphia, Pa.
Amendments to Constitution—WM. J. CLARK, Mt. Vernon, N. Y.
Chamber of Commerce, Membership in—CAPT. WM. E. MCKAY, Boston, Mass.
Calorific Standards—J. B KLUMPP. Philadelphia, Pa.
Central Development and Testing Laboratory—W. H. GARTLEY, Philadelphia, Pa.
Educational—WALTON CLARK, Philadelphia, Pa.
Finance—E. H. ROSENQUEST, New York, N. Y.
Gas & Electric Service (National)—W. H. GARTLEY Philadelphia, Pa.
Gas Securities—RANDAL MORGAN, Philadelphia, Pa.
Funds for Gas & Electric Service—H. L. DOHERTY, New York, N. Y.
National Fire Protection Assn., Membership in—W. R. ADDICKS, New York, N. Y.
Relations with Other Assns., etc. (Formation of Geographic and Company Sections)—L. R. DUTTON, Jenkintown, Pa.
Standard Gas Appliance Specifications—W. T. RASCH, New York, N. Y.
Standard Pipe Threads (International)—W. CULLEN MORRIS, New York, N. Y.

From the Board Room

AT the meeting of the Executive Board on January 28, applications for membership of one holding company, seven gas companies and seventy-four individuals were favorably acted upon. The acceptance of election by Mr. C. M. Cohn, of Baltimore, as a member of the Board to serve the unexpired term of Mr. S. R. Bertron, resigned, was announced.

The Board will meet again in New York on the 25th of February and in Chicago on the afternoon of March 17th, at the time of the meeting of the Illinois Gas Association. Plans for extending our present cooperative relations with the National Electric Light Association in certain matters of mutual interest were discussed and agreed upon.

The Board referred to the Managing Committee of the Commercial Section, recommendations which have been made on the subject of stabilizing the commercial departments of gas companies. This is a matter which has been freely discussed on numerous occasions and one of great interest to commercial men. The Commercial Section will present its views and definite recommendations to the Board for final consideration.

The reports of the various general committees all indicate satisfactory progress. Because of unsettled conditions in Europe, the conference on Standard Pipe Threads, which was to have been held in Paris recently, and at which our International Committee on Standard Pipe Threads had arranged to be represented, has been postponed until January of next year. The Committee on Accident Prevention, of which Mr. J. B. Douglas is Chairman, has been reorganized and is proceeding actively with its work. The Committee, representing the American Gas Association in the National Fire Protection Association, Mr. W. R. Addicks, Chairman, has had representatives in attendance at the meetings of the Committee on Gases and the Sub-Committee on Gas Safety Code of the N. F. P. A. Suggestions for amending the Gas Safety Code have been presented and are under consideration. Attention is also being given to the proposed revision of "Field

Practice," the inspection manual of the N. F. P. A., and several changes and revisions in the publication which relate to the use of gas and gas appliances, will be recommended. The Committee on Standardization of Gas Appliance Specifications, Mr. W. T. Rasch, Chairman, is proceeding actively with its work and has organized several sub-committees, one dealing with the revision of the Standard Gas Fixture Specifications, another which will formulate standard specifications for installing and connecting automatic and instantaneous gas water heaters and a third sub-committee, which will present final recommendations on standard gas tubing specifications. Notice has already been printed of the recent meeting, in Washington, of the Committee which represents the Association as members of the Bureau of Standards, Advisory Board of Gas Engineers. The recent activities of our National Committee on Gas & Electric Service have been fully covered in the bulletins and service letters which have been sent out from time to time in connection with the coal situation.

It has been suggested that the Constitution of the Association be amended so as to permit the members of all affiliated state or district associations to become associate members of the American Gas Association on the same basis of dues as now apply to the employees of company members. It is thought that the new class of membership suggested should also include members of the engineering staffs of state utility commissions, government bureaus, such as the Bureau of Standards, the United States Geological Survey, the Bureau of Mines and similar agencies, and should likewise extend to professors, instructors or other members of the faculties of universities and colleges, technical institutes and similar educational establishments engaged in engineering work, scientific research and other activities related to the gas business. The Committee on Amendments to Constitution will report its recommendation to the Board at an early date.

The desirability of cooperation with educational institutions was discussed, with the view to bringing to the attention of technical students the opportunities which our industry offers to those about to enter business. A special committee will be appointed to take this matter in charge.

These notes include only matters of general interest. The routine business transacted by the Board is omitted as are also other matters of which notice appears elsewhere in the MONTHLY, or in our bulletins or service letters.

National Committee on Gas and Electric Service

Many companies have responded promptly and liberally to the request made by Mr. Henry L. Doherty for contributions to meet the expenses of the National Committee on Gas and Electric Service. Mr. Doherty, as Chairman of the Special Committee appointed for the collection of these funds, described in his request the important service which the National Committee had performed on behalf of the gas industry.

The amount subscribed to date is sufficient to meet the expenses incurred by the Committee during the war period, but will not cover the more recent period of the Committee's renewed activities in connection with the coal emergency.

This is a burden which should be shared by all gas companies and one not to be carried only by those who have so far subscribed. Companies which have not yet responded to Mr. Doherty's appeal should take prompt action in the matter.

A. G. A. Committees to Meet in Chicago During March

In order that the Western and Eastern members may have an opportunity to meet together and discuss association and committee activities, it is planned to have the following meetings in Chicago during the month of March.

Executive Board—

Will meet during the afternoon of March 17 in the Board Room of the Peoples' Gas, Light & Coke Company.

Commercial Section—

The Managing Committee of the Commercial Section will hold a meeting during the morning of March 17.

Technical Section—

An all day conference of the various committees of the Technical Section will be held on March 19.

One session of the conference will be devoted to a consideration of the progress reports of these committees.

The other session will be for open discussion, covering topics of general interest to the technical men of the industry.

All members of the Technical Section, whether members of committees or not, are invited to attend this session.

Accounting Section and Manufacturers' Section—

The Managing Committee of these two sections will meet on the afternoon of March 18.

Use The Seal

The official seal of the Association, displayed on the business stationery and advertising material of its members, carries a distinct message. It tells the reader that there is an American Gas Association and it informs the reader and the public generally that the company, on whose literature the seal appears, is a member of the national organization which stands for progress in the gas industry.

As the result of the article which appeared on page 11 of the January issue of the MONTHLY, a number of companies have adopted the Association's seal for use on all of their stationery and their advertising matter. The sketch herewith will enable the photo engraver to make cuts to suit the company's individual needs.

The Association wants samples of stationery or other local material on which this seal appears and we hope to see it in general use by all of our company members and by our affiliated societies.

Company Member of

To Gas Company Members

The returns of Operating and Commercial Data and Statistics for the year 1919 are coming in, but many companies have yet to be heard from. Don't forget that the sole reason for collecting this material is that it may be compiled and used for your benefit. Answer the questions fully, and where definite information is not available estimate the items, as requested in the schedule. Send the returns in promptly. It takes two to cooperate.

Our Association is Growing in Membership and Influence

On the opposite page is the second of a series of five full page advertisements, which will appear in the gas trade journals, as a part of our effort to interest every gas company, every manufacturer of gas apparatus, appliances and supplies, and every individual, engaged in the development of our business, in taking membership in the A. G. A.

The accompanying list of companies and individuals, who have recently joined the Association, is a gratifying response to our invitation to our industry to get together and work for a common purpose.

New Members Enrolled in the American Gas Association, Inc.

January 10, — February 9, 1920.

GAS COMPANY MEMBERS

Helena Gas & Electric Co. ..... John S. M. Wharton, Helena, Ark.
Lakeland Gas Co. ..... Lakeland, Fla.
Union Gas & Electric Co. ..... Ray Stretch, Bloomington, Ill.
Citizens Gas & Fuel Co. ..... C. D. Shaul, Terre Haute, Ind.
Amesbury & Salisbury Gas Co. ..... John A. McCarthy, Amesbury, Mass.
Springfield Gas & Electric Co. ..... W. W. Nielson, Springfield, Mo.
Manchester Traction Lt. & Pr. Co. ..... W. F. Norton, Nashua, N. H.
N. Y. State Gas & Electric Co. ..... G. A. Strain, Ithaca, N. Y.
Lancaster Gas Light & Fuel Co. ..... H. J. Von Nieda, Lancaster, Pa.
The Wilkesbarre Co. ..... E. A. Wakeman, Wilkesbarre, Pa.
Columbia Railway, Gas & Elec. Co. ..... V. S. Wright, Columbia, S. C.
Houston Gas & Fuel Co. ..... F. D. Murphy, Houston, Tex.

HOLDING COMPANIES

The United Gas & Electric Corp. ..... E. G. Connette, New York, N. Y.

MANUFACTURERS

The Brown Instrument Co. ..... R. O. Brown, Philadelphia, Pa.
Gas Engineering Co. ..... Frank D. Moses, Trenton, N. J.
E. E. Steiner & Co. ..... E. E. Steiner, Newark, N. J.
Stephens-Adamson Mfg. Co. ..... D. C. Pierson, Aurora, Ill.

Active Members

DELAWARE

Wilmington Gas Co., Wilmington
Frank A. Corbin
Wilfred W. Shanner
Clifford Young

ILLINOIS

National Machine Works, Chicago
C. J. Levey

North Shore Gas Co., Chicago
A. C. Winters

Public Service Co. of No. III., Chicago
S. J. Palmer

Illinois Traction System, Peoria
W. J. achelpohl

INDIANA

Northern Indiana Gas & Elec. Co., Hammond
Albert R. Keller

Northern Indiana Gas & Elec Co., Lafayette
H. E. Goheen

IOWA

People's Light Co., Davenport
H. E. Weeks

MARYLAND

Consd. Gas, Elec. Lt. & Pr. Co., Baltimore
Walter S. Allen
R. R. Barr
Richard E. Dallam
William L. Dallam
Alexander Donald
Frank K. Foster
C. Ross Gill
Harmon O. Grimes
L. E. Grimes
Christopher W. Guckert
Edward L. Harp, Jr.
E. T. C. Hofstetter
Charles R. Hurtt
William H. James
James E. Kane
Charles F. Klug

(Continued on page 156.)

A Good Investment

For Every

Gas Company

THE American Gas Association has a membership of companies and individuals interested in the welfare and progress of the gas industry.

Whether it is statistical or technical information, trade service, merchandizing or advertising helps, accounting methods, window display suggestions, education for employees, solution of industrial fuel or other problems common to the business, THE AMERICAN GAS ASSOCIATION is the logical organization to supply the industry's needs.

The Association is securing for the industry a real recognition and fair treatment, is meeting issues fairly and squarely, and is devoting its energies to the handling of the important matters which have a direct bearing on the prosperity of our business.

Is your company fully aware of the benefits of membership in this organization? It will pay you to investigate. Why delay?

Write to Association Headquarters for further details

130 East 15th Street, New York, N. Y.

Second of a series of five full page advertisements to appear in the gas trade papers

(Continued from page 154.)

Consd. Gas Elec Lt. & Pr. Co., Baltimore
Irvin C. Knowles
Joseph B. Lauer
August J. Loeser
Joseph F. McCleary
Thomas W. McKew
Martin A. McLane
J. Curtis Medcalf
Chester F. Miskelly
George F. Nieberlein
F. J. Peissner
O. H. Pritchett
Wilford F. Railing
T. F. Spicknall
William H. Stuck
Robert Surridge
Richard S. Tall
Carl C. S. Walter
Smallwood L. Wolfe

The Bartlett Hayward Co., Baltimore
William Strobridge

MASSACHUSETTS

Charles H. Tenney & Co., Boston
Isaac S. Hall

Brockton Gas Light Co., Brockton
Lester E. Howard
Reginald H. Sheldon

MICHIGAN

University of Michigan, Ann Arbor
Alfred H. White

Grand Rapids Gas Light Co., Grand Rapids
Carl B. Wyckoff

Detroit Stove Works, Lansing
J. A. Weston

NEW JERSEY

Public Service Corp. of N. J., Newark
A. J. Van Brunt

NEW YORK

The Barrett Co., New York
F. A. Canon
John M. Weiss

Cities Service Co., New York
Louis F. Musil

Consolidated Gas Co. of N. Y., New York
George P. Barnitz
W. J. Meyers
R. D. Russo
James Scullion, Jr.

Hodenpyl, Hardy & Co., New York
Samuel E. Wolff

N. Y. & Richmond Gas Co., Stapleton
Charles F. McWhorter

Semet-Solvay Co., Syracuse
Bates Torrey, Jr.

PENNSYLVANIA

The U. G. I. Contracting Co., Philadelphia
Carl A. Schlegel

The Koppers Co., Pittsburgh
William F. Pearce

U. S. Bureau of Mines, Pittsburgh
Joseph D. Davis
Alfred R. Powell

RHODE ISLAND

Providence Gas Co., Providence
Arthur F. Short

Blackstone Valley Gas & Elec. Co., Woonsocket
Frank. E. Carr
Sylva E. Choquette
Charles B. Healy
Roy A. Laflamme

CANADA

Consumers Gas Co., Toronto, Ont.
Ernest W. Brown
Charles Scott

What Is A Pep-ti-mist?

A pessimist closes an eye, wrinkles his face, draws up the corner of his mouth and says—"It can't be done."

An optimist has a face full of sunshine. He beams on you and says—"it can be done," and then lets Joe do it.

But a pep-ti-mist takes off his coat, rolls up his sleeves, goes to it and does it.

So let's all be Pep-ti-mists in 1920

The Vulcan Bulletin

Accident Prevention Committee

THE Committee on Accident Prevention consists of the following members:

J. B. DOUGLAS, Philadelphia, *Chairman.*
H. E. ALMBERG, New York City.
H. L. NICKERSON, Boston.
C. E. PAIGE, Worcester.
C. E. REINICKER, Philadelphia.
H. R. STERRETT, Des Moines.

At a meeting held at Association headquarters on January 29th, correspondence between the Chairman and several members of the Association bearing on accidents and their prevention was reviewed. The question of taking up public accidents as Committee work was considered, and it was thought advisable for the present to deal only with such cases as in some way concern employes and their work.

Several booklets on first aid in asphyxiation cases were mentioned, and it was decided to consider a modified edition such as the National Electric Light Association issued in 1919 to cover gas asphyxiation first aid work, in short form, as suggested by Mr. C. E. Paige.

A telegram was received from Mr. C. E. Paige, referring to the importance of self-starters on automobiles as an accident prevention measure. It was decided to draw the attention of the membership to several practical non-kick devices which can be applied to crank shafts of automobiles at small expense compared with the cost of self-starters. Notes on anti-kick devices will be inserted in the Association MONTHLY, together with short article on protection from ice and snow falling from inclined roofs; also an article on making coal trestles safe, both as mentioned by Mr. Paige.

Two pages in each issue of the Association MONTHLY are to be devoted to accident prevention matters under the heading "Accident Prevention Committee", and articles for these pages are to be sent to the Association by the Chairman rather than by contributors. The Chairman would like to receive contributions from the members of the Committee for this purpose.

The revision and improvement of the 1919 Report of the Accident Prevention Committee submitted at the last annual convention in New York City was considered.

It was decided to submit that section of the said Report referring to the Manufacturing Department, to Mr. H. L. Nickerson and Mr. C. E. Paige for revision and enlargement; the section on Distribution Department to be referred to Messrs. C. E. Reinicker and H. R. Sterrett for the same purpose.

It was considered important to have a special section on Vehicles,—Motor, Horse and Hand. Work on such section, together with accident prevention work bearing on commercial departments of gas companies, was referred to Messrs. H. E. Almberg and R. D. Shields. (Mr. Shields is in the employ of the Syracuse Lighting Company at Syracuse, and has offered to assist in the Committee work. The general section of the report and the analyses are to be taken care of by J. B. Douglas. Reports of accidents to employes are being received by the Chairman from various member companies and are added to the analyses under compilation.

The suggestion from Mr. H. R. Sterrett that the Committee standardize accident record books and make them available to small companies through the Association, was at same length considered and referred back to Mr. Sterrett for report.

The members to whom the foregoing assignments have been made should communicate with each other on their

respective subjects and be prepared to make a report on progress at the next meeting.

From time to time requests for opinions which have really meant legal advice have been handled by the Chairman. The question of whether the Committee soliciting opportunities should be of assistance in such matters was considered. It was thought that although the Committee would be glad to give such information and advice from time to time, it should not seek the opportunity because the questions involved are principally legal in character and can well be answered by a company's legal advisor.

In order to prevent the occurrence of similar accidents, attention is directed to a case in which an explosion resulted from the use of denatured alcohol as an anti-freeze mixture. A lighted match was used in examining the water level in the radiator of an automobile, in which denatured alcohol had been mixed with the water, and an explosion followed, blowing the top off the radiator.

A. S. M. E. Code for Miniature Boilers

The Boiler Code Committee of the American Society of Mechanical Engineers plans shortly to undertake the preparation of a code for miniature boilers. Presumably this will include gas-fired boilers of the type which has been brought into such extensive use by gas companies that they now rank among the most important of our industrial appliances.

Under the procedure which now governs the leading engineering societies in the preparation of codes and standards, the A. G. A. has requested the American Engineering Standards Committee to designate this Association as one of the sponsor bodies for the preparation of the Miniature Boiler Code, insofar as it may have bearing upon or relate to gas-fired boilers.

Midwinter Conference of Officers and Council of Iowa District Gas Association

On Tuesday, January 27, Messrs. Roper, Hanlan, Maynard, English, Chubb and Sterrett, officers and members of the Council of the Iowa District Gas Association met at the Des Moines Club (Iowa) for their regular mid-winter conference.

It was reported that $157 had been collected from the gas companies of Iowa to defray the expense of maintaining a Public Utility office and representative at the last session of the Iowa State Legislature.

Mr. Hanlan was appointed a committee of one to meet with representatives of other associations and to report at the next meeting on the advisability of forming an Iowa Committee on Public Utility Information, to work along lines similar to the Illinois Committee on Public Utility Information. Mr. Hanlan reported that the Iowa section of the N. E. L. A. had acted favorably on the plan.

It was decided that the 1920 Convention would be held April 21-22 at the Fort Des Moines Hotel, Des Moines, Iowa.

No formal papers will be prepared but instead there will be four sessions, Manufacturing, Distribution, Commercial and Accounting, with a chairman for each session. Round table discussions of the topics which would be of interest to the respective divisions will be carried on. The Proceedings will not be recorded and it is anticipated that this will result in a more general discussion and greater benefit to the members.

Mr. Chubb was appointed chairman of the committee to arrange the programs of the various sessions.

A banquet will be held at the Fort Des Moines Hotel the evening of April 21.

ACCOUNTING SECTION

A. P. POST, Chairman — A. L. TOSSELL, Vice-Chairman

H. W. HARTMAN, Acting Secretary

MANAGING COMMITTEE — 1920

At Large

ALDEN, CHARLES A., Boston, Mass.
BRUNDAGE, H. M., New York, N. Y.
BULFIN, J. F., St. Louis, Mo.
ERICKSON, HALFORD, Louisville, Ky.
PETTES, W. H., Newark, N. J.
POST, A. P., Philadelphia, Pa.
REES, RICHARD, (Mfr.) Kalamazoo, Mich.
SCHMIDT, WM., JR., Baltimore, Md.
SCOBELL, E. C., Rochester, N. Y.
TOSSELL, A. L., Chicago, Ill.

Representing Affiliated Societies

ARMSTRONG, J. J., Toronto, Can. (Canada)
BARNES, A. M., Cambridge, Mass. (N. E. Gas Eng.)
CHAPIN, C. H. B., New York, N. Y. (Empire State G. & E. Ass'n.)
EATON, H. M., Detroit, Mich. (Michigan)
HAASE, EWALD, Milwaukee, Wisc. (Wisconsin)
HOUGHTON, W. E., Los Angeles, Cal. (Pacific Coast)
JAMES, F. M., Aurora, Ill (Illinois)
MAYNARD, H. B., Waterloo, Iowa. (Iowa)
MCCABE, J. B., Dallas, Texas. (South Central)
PORTER, EDW., Philadelphia, Pa. (Pennsylvania)
POTTER, O. F., Newark, N. J. (New Jersey)
SHEAKON, B. P., Hammond, Ind. (Indiana)
STOTHART, E. C., Charleston, S. C. (Southern)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Automobile Cost Accounting—S. J. PALMER, Chicago
Merchandise Accounting—W. A. SAUER, Chicago
Job Order Systems—W. G. STERRETT, Chester, Pa. Vice-Chairman, F. M. JAMES, Aurora, Ill.
Office Labor Saving Devices—J. L. CONOVER, Newark, N. J.
Papers—H. M. BRUNDAGE, New York, N. Y.
State Representatives—J. W. HEINS, Philadelphia
Trade Acceptances—(Joint Com. with Mfrs.) L. F. MUSIL, New York, N. Y.
Uniform Classification of Accounts and Form of Annual Report to Public Service Commissions—W. J. MEYERS, New York, N. Y.
Uniform Accounting Nomenclature—W. H. PETTES, Newark

Managing Committee Discusses Convention Program

THE third meeting of the Managing Committee was held at Association headquarters, January 22, with the following members present: A. P. Post, Chairman; Chas. A. Alden, H. M. Brundage, C. H. B. Chapin, J. W. Heins, W. J. Meyers, W. H. Pettes, Edw. Porter, W. A. Sauer, A. L. Tossell and H. W. Hartman, Acting Secretary; by invitation O. H. Fogg, Secretary-Manager and P. H. Hall, Field Representative.

After considering the material at present in preparation for the Accounting Sessions of the Convention it was decided that the program could include three papers on accounting subjects in addition to the paper on "Purchasing and Storeroom Accounting" by Mr. L. H. Werner.

The following subjects for papers were suggested:

Financial Reports to Executives.
Bonus or Piece Work Payment for Commercial Office Employees, Meters Readers and Collectors.
Quarterly Reading and Billing vs. Monthly Reading and Billing.
Machine Bookkeeping.
Proper Method of Preparing Tax Accruals.
Meter Records.
Can a Credit Department of a Gas Company Build up Good Will Among its Patrons?
Post-War Status of Service to Gas Customers (Gratuitous and Paid For).
What Should Govern Promotions and Transfers of Employees.
Training and Educating Employees.
Standardization of Gas Company's Printed Forms.

The following Committee on Papers was appointed to select three papers from the various suggestions received and secure authors for same:

H. M. Brundage, Chairman, Consolidated Gas Co., New York, N. Y.
A. L. Tossell, Peoples Gas Light & Coke Co., Chicago, Ill.
Wm. Schmidt, Jr., Consolidated Gas. Electric Light & Power Co., Baltimore, Md.

The Committee will be glad to receive from our members further suggestions as to subjects and authors for accounting papers.

State Representatives

As a result of announcements published in the January and February issues of the MONTHLY and a circular letter forwarded to all member companies on January 19, the service of the Committee in answering accounting problems of gas companies is now in full swing. Due to the decision to revive the Question Box with this issue the questions and answers obtained through the committee have been published in that Section of the MONTHLY instead of the Accounting Section as originally planned. Our Accounting members should form the habit of reading the Question Box each month and send in additional answers to all questions where the procedure in their company has a bearing on the problem.

Another function of this committee is to obtain accounting articles for publication in the MONTHLY and the Chairman was advised to instruct the State Representatives that articles for this purpose were desired on the following subjects:

Billing Consumers.
Collections.
Merchandise Accounting.
Subjects Relating to the General Books.
Articles indicating points of contact between the Accounting and other Departments of a gas company.

An article on collections secured by the committee appears in this issue. A second article on collections from the standpoint of the smaller gas company will appear in the April issue.

Joint Committee on Trade Acceptances

An account of action taken by this Committee is reported under the Manufacturers Section.

Uniform Accounting Nomenclature

A circular letter was forwarded to all company members in February asking their suggestions on a schedule of nomenclature applying to various positions, etc., in the departments of a gas company. It will greatly facilitate the work of the committee if the comments requested therein are promptly forwarded to the Chairman. If any company or accounting member has not received a copy of this letter and enclosure additional copies can be secured on application to Association headquarters.

Report of N. E. L. A. Committee on Federal Income Tax Procedure

The Managing Committee authorized the distribution to member companies of a pamphlet containing important information on Federal income taxes prepared by the N. E. L. A. Committee on Federal Income Tax Procedure. Through the courtesy of the N. E. L. A. reprints of this pamphlet were obtained and distributed in February. Additional copies can be obtained on application to Association headquarters.

Standard Classification of Accounts

Mr. Meyers reported that a meeting of his committee would be held February 10, to take necessary action on the criticisms received of the Tentative Classification of Accounts.

Collecting Consumers' Gas and Sundry Sales Accounts

By THOMAS G. WILLIAMS, Agent, Frankford District, The United Gas Improvement Company, Philadelphia Gas Works

(NOTE: An article outlining collection routine for a smaller gas company was to have been printed in this issue in conjunction with the following paper. The purpose was to set forth collection procedure both from the standpoint of the large and small gas company. Due to a lack of space this second article will appear in the April issue.—*Editor.*)

THE subject of collection of accounts is one about which so much has been written that it is difficult to write anything that has not been said before. The method of collection of sundry merchandise accounts by a public utilities Company should not differ from the method of any business organization merchandising similar lines.

In the collection of delinquent gas accounts the method used must of necessity be governed by local conditions. In the following article we will speak only of Philadelphia practice as applied to a subdivision or district comprising 55,000 consumers:

Nature of Accounts

GAS: Those resulting from actual sale of gas.

MERCHANDISE: Those resulting from sale of miscellaneous gas consuming and auxiliary appliances.

In the collection of bills for gas there is little to be said or suggested. The fact that consumers realize their supply of gas depends upon prompt payment of bills is about all that is needed to secure the desired result. There are times of course when leniency should be shown and it should not be hard for the person or persons in charge of the collection of gas accounts to decide just where the line must be drawn. Mere theory, is not all that is necessary to be successful in this respect. Past experience plus common sense and the realization that both the Company and the consumer should have what is due them will provide the base or foundation on which the policy of a collection department should be conducted.

The loss of revenue through this channel is usually through final accounts, where the consumer moves to another part of the town or to another city and purposely or carelessly fails to leave the new address; or the chronic "dead beat" who intentionally moves from one address to another and uses a fictitious name. Of course, where an application is made for a supply of gas, at the new address, if the correct old address is given, an unpaid bill will be revealed by proper search of the ledger.

Granting that the above are the two main reasons for unpaid gas accounts, it appears that these conditions should have some special attention. Accounts which we will term "Locates" should be laid aside and given to special men who have shown special ability in locating people who have moved and failed to give information as to their new address. By keeping a record of the approximate expense of such work, together with the results obtained, will soon enable anyone to determine if the effort is worth while. In the District of which we are writing it has paid for itself beyond a question of a doubt, both in the loss recovered and the moral effect.

Where an "Out of town" condition occurs special attention must be given to

correspondence. In this case the usual form letters that are sent to a consumer, on our mains, cannot be used. Success has been obtained by using a "chatty and friendly letter" in which an appeal is made to the person's sense of honesty and to their moral obligation. If such efforts fail then other methods must be adopted.

If the consumer has moved to a city where gas is used the company in that city should be appealed to and requested to assist in the collection of the account. Probably a better spirit of cooperation along these lines would be very beneficial. All accounts of this nature after we have written, are placed in a separate file, which is considered reserve, to be taken up at times when an opportunity presents. If within a month after we have written on such an account, nothing is heard we again write, and if no reply is received to the second communication, we consider the account uncollectible.

The collection of merchandise accounts offers the larger field of activity in collection work. Here we have a condition, where in Philadelphia and likewise a great many other situations, it is impossible to force collection by the discontinuance of the supply of gas. We must rely entirely upon the efficiency of the collection division and the ingenuity of the one in charge.

ADVERTISING: If advertising is used, a statement should be made that credit is and will be given, or that the terms are cash. If prices are quoted the terms of payment should also be stated.

SELLING: Salesmen both in the office and stores and in the field should be particularly careful when making a sale to explain the terms of payment and impress the purchaser that they must be complied with and payments made promptly.

The man in the field, when taking an order knows that he is taking it contingent upon the collection division passing the credit. He should, therefore, not only fill out the printed form of the order answering all questions appertaining to credit, but in addition should give information as to his impressions of the consumer's environment and general desirability

CREDIT: Proper attention to the orders when first received, verifying credit information, the terms of the sale, determining whether the order is good and whether the account will be readily collectible. Every one who handles this part of the work should be made to realize that with conscientious effort they can save a loss of tremendous proportions. To allow one order to go through, which should have been "turned down" may mean a loss equal to a month's salary of one employee.

In our opinion the collection division is the only proper place for passing of credit. Passing on the credit of consumers: the ledger containing the gas accounts should be scrutinized to verify the fact that consumers are of record. Ascertain if they have met their obligations promptly; consult the Sundry Sales files and see if they have purchased any article, payment of which has not yet been made in full. Look up Profit and Loss files to see if they have ever failed to pay an account. In this District a card record is kept of all purchasers, alphabetically by name, of every completed payment on an account, which shows whether they were prompt, slow, or poor pay.

CLERICAL: Attention to the account when received and ready for collection. Careful attention to see that calls are made at such times as scheduled. Carelessness on the part of clerks will spoil

all the hard work of a collector. When accounts are not paid to date, and where letters are necessary, it should be seen that such accounts are handed over to those who handle the correspondence. The posting of all office payments on the collection cards should be kept up to date for many a good paying customer has been irritated by the receipt of a letter stating that they are back in payments, when the account was in really good condition. Collectors can only be successful when they are equipped with correct accounts, and it is the duty of those in charge of the clerical work to see to it that the collectors are thus supplied. The reading of the collectors' reports and the ability to decide quickly what step is next necessary, is essential.

An efficient routing clerk must be familiar with the dispositions of the collectors, their mode of expressing themselves, dates, routes, and the character of the neighborhoods.

Failure to promptly place a collection call card in the collector's hands will result in the loss of a call and the possibility of obtaining a payment then due. Just a little carelessness of this kind on the part of a collection clerk often causes a prompt paying consumer to become careless.

CORRESPONDENCE: The form and tone of the letters: Here it is necessary to make a decision. Shall form letters be used or not? Printed or mimeographed forms with certain information filled in have very little value, except in the very first stages of collection. However, it cannot be denied that in many cases the same form of letter can be used and it would be useless to dictate this same form over and over again. The most successful method is to save all those forms, which have proven successful and index them. Not only the letters, but in some cases the paragraphs also.

Any correspondent will not deny that from day to day or even hour to hour there are times when it seems easier to dictate better letters, and when a good one is created it should be saved. A good correspondent will easily memorize these various forms, and by being also familiar with the collection records can easily dictate a great many forceful and efficient letters. This affords an opportunity of giving every case individual attention, and in about one hour enough dictation can be given a stenographer, which together with form letters, will keep him or her busy for an entire day.

The form of letters for gas and merchandise accounts will differ. Therefore, such forms could be indexed as G21 or M15, etc. It should not be hard to determine whether or not it pays to give special attention to letters as an aid to collection. A record can be kept of a certain number of letters sent out and the results obtained. We have no hesitancy in saying that in every instance where such records were kept it has been proved that the results more than warranted the expense and labor expended.

A letter always represents the house sending it out and it is always respected as a message direct from the front. A collector who is backed up by a good line of collection letters has a much smoother road to travel than where he must fight all the battles himself. It must also be borne in mind that letters also keep the collectors on the job. A collector is going to report the true facts when he knows that where payments are not secured according to terms a letter will be sent. If the customer should receive a letter which was not warranted by the true conditions, what a fine reception awaits the collector on his next call. Too much attention cannot be given to the

adoption of correct and forceful letters as an aid to collection.

COLLECTORS: Where the number of accounts does not warrant a large force, it is of course necessary to have such a man or men as will assure the proper attention to the accounts. No men are blessed with disposition as will suit everybody. Almost every article that has been submitted on collections has endeavored to state just what qualifications a good collector should possess. What they should not possess should also have some attention. A grouchy, cranky and impatient man should have no place on a collection force. It is always possible to be forceful and insistent without showing a nasty disposition. Even the apparent hard and icy treatment of a "dead beat" can often be softened and melted by the warmth of the pleasing personality of a good collector. Where a large force of collectors is employed it is at times possible for a certain type of man to be more successful with certain kinds of cases and special attention to having these characteristics put to good use is the work of the one in charge of the collection division.

LENGTH OF TIME IN A CERTAIN DISTRICT OR SECTION: It is not well to change collectors' districts too often. This must also be governed by the nature of the district and the people who comprise it. This must be worked out from actual experience. In Philadelphia it has been found advantageous to keep a man in a district not less than three, or more than six months.

The City of Philadelphia is divided into seven separate and distinct districts, each having a District Office. These offices handle all of the accounts within the boundaries of their respective territories.

The Frankford District, (which is a community of textile and other large industries) is divided into sub-districts, or divisions, a different one being covered each day of the week. These sub-districts are further sub-divided into sections, the sections being governed by the number of accounts to be handled. If seven men were necessary to cover the calls there would be that many sections. The days that the sub-districts are to be worked is governed by the nature of the neighborhood.

A certain sub-district may be composed of people working in industrial establishments, where wages are paid on Saturday; this territory is worked on Monday. Another territory is composed of people who are paid on Thursday; this is worked on Friday. All kind of conditions must be taken into consideration in coming to a decision when these sections should be covered.

There is a certain advantage in calling on certain days, inasmuch as the people know just what day of the week the collector can be expected. The "dead beat" will make it a point not to be home on this day, but a letter telling them that such a condition is no excuse for non-payment will sometimes remedy such cases.

Reports: In order to determine which collectors are most efficient it is necessary to have reports. Such reports should show the following data:

Daily Report.

Number of calls made.
Amount of cash collected.
Number of collections made.

At the end of the month this information can be compiled and the following information secured:

Average number of calls per day.
Average amount of cash collected per day.
Percentage of collections on calls made.

(Continued on page 200.)

ADVERTISING SECTION

GEORGE WILLIAMS, Chairman — HERBERT K. DODSON, Vice-Chairman

CHAS. W. PERSON, Secretary

MANAGING COMMITTEE

At Large

BRILL, A. P., Pittsburgh, Pa.
CLARK, WM. J., Mt. Vernon, N. Y.
COLLINS, D. J., Philadelphia, Pa.
DODSON, HERBERT K., Baltimore, Md.
GOULD, WM., Boston, Mass.
HANLAN, JAMES P., Newark, N. J.
MULLANEY, B. J., Chicago, Ill.
PRATT, T. B., New York, N. Y.
ROBBINS, M. C., New York, N. Y.
ROPER, GEO. D., Rockford, Ill.
RUTLEDGE, F. J., Philadelphia, Pa.
WILLIAMS, GEORGE, New York, N. Y.

Representing Affiliated Societies

ALLEN, GEO. W., Toronto, Can. (Canadian)
AUSTIN, E. E., Sumter, S. C. (Southern)
FRANKLIN, S. J., Millville, N. J. (New Jersey)
FUGATE, FRANK, Detroit, Mich. (Michigan)
HIGGINS, A. A., Providence, R. I. (New England)
JASPERSON, R. O., Chicago, Ill. (Wisconsin)
LESTER, F. M., Chicago, Ill. (Illinois)
MANTLE, G. D., Oakland, Cal. (Pacific Coast)
MARTIN, E. H., Des Moines, Ia. (Iowa District
MULHOLLAND, S. E., Fort Wayne, Ind. (Indiana)
RALSTON, R. J., Philadelphia, Pa. (Pennsylvania)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Plan and Scope—M. C. ROBBINS, New York, N. Y.

The News, Magazine and Advertising Service

THE second meeting of the Plan and Scope Committee of the Advertising Section was held at Association Headquarters on Thursday afternoon, February 5th, Mr. M. C. Robbins, chairman, Mr. W. G. Gribbel and Mr. Oscar H. Fogg were present, two other members of the committee being absent because of sickness.

Members of the A. G. A. who are interested in the Section's plans will be glad to hear that the news and magazine service is now in full operation, and with the continued assistance of company representatives who have been requested to keep the Section supplied with news items as fast as they appear in their local papers, there is no reason why the publicity program adopted should not measure up to expectations.

Importance of Sending in Clippings

Too much emphasis cannot be laid on the importance of keeping the Section advised of the publication of its news items. In no other way is it possible for the Section to know whether its work is meeting with success or not. A press clipping agency is employed, of course, but it can only be held responsible for reading one-third of the newspapers published and many of the Section's articles have appeared in newspapers which are never read by the agency. Hereafter there will be mailed with each news article or set of articles an addressed envelope with these words printed in large letters in the upper left hand corner: "Press Clippings for A. G. A." This envelope should be placed on the desk in front of the advertising manager or other person in the company who is distributing the articles for the Section, as a constant reminder to send in clippings.

Magazine Articles

The section is making good progress with its magazine articles. The Secretary is in communication with a number editors and correspondents and is endeavoring to have them turn regularly

to the A. G. A. for any information on gas which they may desire. The Committee is desirous to have it known throughout the country that the A. G. A. is the logical place to look to for gas information. The Chairman has written a letter to the Associated Business Papers, Inc., setting forth this fact.

Among the magazines which have used material prepared by the Section are *Scientific American, Popular Science Monthly, Popular Mechanics, Illustrated World, The Foundry and the Metal Worker, Plumber and Steam Fitter.* News releases are also sent to class publications when the subject matter is of interest to them.

Advertising Service Started

On the accompanying page is shown the first of the series of good will or public policy advertisements which the Section is now sending to company members for insertion in their local papers. Although the advertisements will be standardized as regards size, border design and type style, each one will carry a special message in picture form. The method of using these advertisements is so flexible that it will meet all local conditions. For instance, if the text matter does not meet with the company's approval or if it does not apply to a peculiar local condition or if for one reason or another it is not entirely suitable, it may be altered or it may be eliminated altogether and new text supplied. This can be done by the company very easily and the cost of doing it is negligible.

How to Use the Art Design

As regards the art design, it may be used not alone for one advertisement, but for several. It may be used the second time to sell heaters, another time to sell ranges, and so on indefinitely. Or if the whole design is not desired, any part of it may be used.

One Advertisement a Month

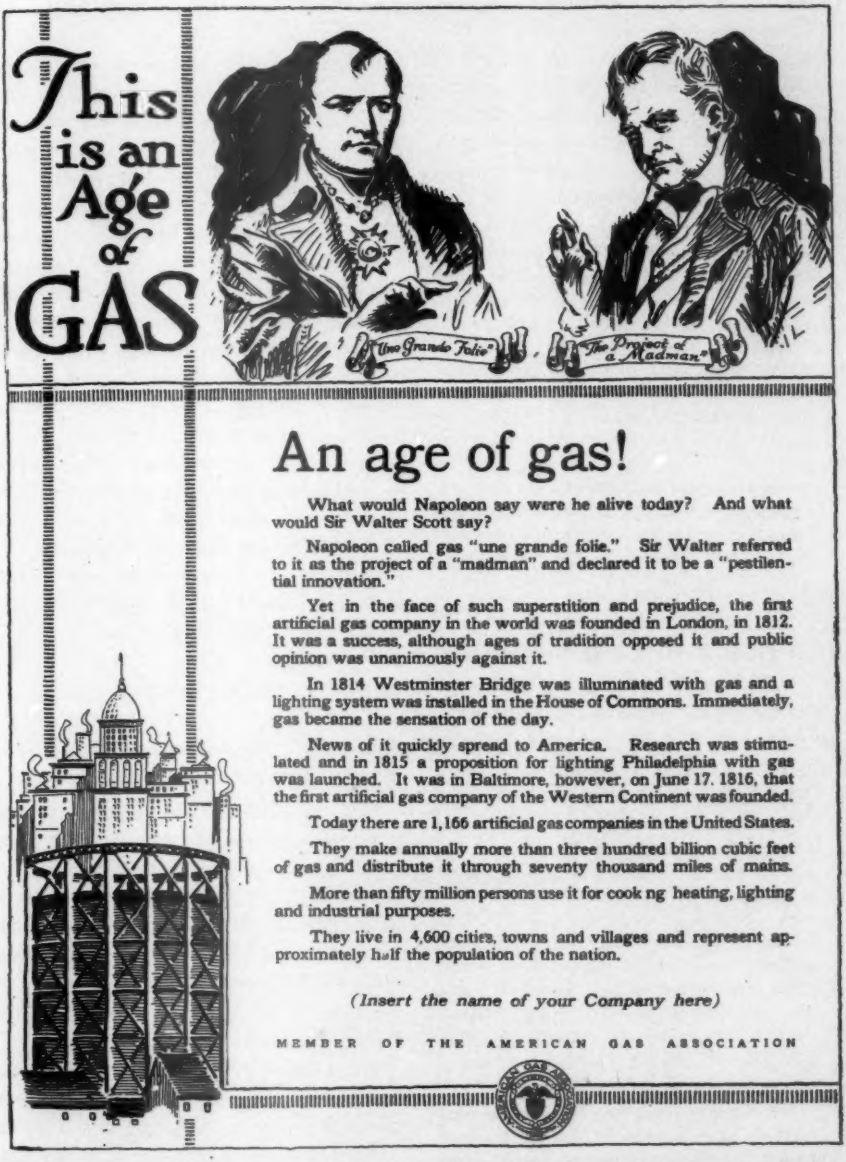
One advertisement will be issued a month and the subjects covered will be of such a general nature as can be subscribed to by all companies. The Committee believes that the series will meet with immediate success. The art work is being done by the largest and best known agency in the field and the copy is read and passed upon not by the Committee alone but by advertising men outside the industry, who are as interested in the campaign as we are.

The Association will furnish companies with matrices of regular newspaper column size, either three or four-column width, at $3 each. This price is made to cover bare cost of making drawing, cut, proof and matrix. If the sizes mentioned above are too small or too large, the company may have a plate of any desired size made from the proofs which are submitted to it.

Companies are urged to send orders to Association Headquarters at once for as many of the matrices of each advertisement as they will require for insertion in local newspapers they desire to use.

The appearance of this series of advertisements in the local newspapers of all our company members at practically the same time will certainly create a favorable sentiment toward gas companies, and the frank statement of facts regarding the business contained in them will undoubtedly make for a better understanding of the problems of our business and a realization of the necessity for giving the gas company a square deal.

The matrices should be ordered according to the serial numbers on the proofs, and a copy of the advertisement as it appears in the local newspaper should be forwarded to this Section. We will be as glad to see it in print as you.


This is an Age of GAS
"Une Grande Folie"
"The Project of a Madman"
An age of gas!
What would Napoleon say were he alive today? And what would Sir Walter Scott say?
Napoleon called gas "une grande folie." Sir Walter referred to it as the project of a "madman" and declared it to be a "pestilential innovation."
Yet in the face of such superstition and prejudice, the first artificial gas company in the world was founded in London, in 1812. It was a success, although ages of tradition opposed it and public opinion was unanimously against it.
In 1814 Westminster Bridge was illuminated with gas and a lighting system was installed in the House of Commons. Immediately, gas became the sensation of the day.
News of it quickly spread to America. Research was stimulated and in 1815 a proposition for lighting Philadelphia with gas was launched. It was in Baltimore, however, on June 17, 1816, that the first artificial gas company of the Western Continent was founded.
Today there are 1,166 artificial gas companies in the United States.
They make annually more than three hundred billion cubic feet of gas and distribute it through seventy thousand miles of mains.
More than fifty million persons use it for cook ng heating, lighting and industrial purposes.
They live in 4,600 cities, towns and villages and represent approximately half the population of the nation.
(Insert the name of your Company here)
MEMBER OF THE AMERICAN GAS ASSOCIATION

First of a series of twelve good will advertisements now being prepared for your use. The copy may be changed to suit your particular requirements or you may substitute copy of your own. The art design can be used over and over again. Price of advertisement complete with matrix $3.00. Place your order immediately for the entire series.

Daylight Saving

Under the title, "A Potential Element," the Salem (Mass.) *News* makes the following editorial comment on the attitude of the gas companies in regard to the Daylight Saving Law which was explained in a recent newspaper release issued from Association headquarters:

> There have been charges in plenty, along with widespread intimations, that congressional over-riding of the veto message in which President Wilson sought to preserve daylight saving was responsive in large part to opposition by lighting interests to retention of the law. The American Gas Association, reported to comprise at least 70 per cent. of the gas industry of the country, denies the soft impeachment. This fact was brought out by Senator Calder, who made public the correspondence between the association and himself, the former specifically denying that it had engaged in any propaganda whatever against the daylight saving scheme.

What Does Your Local Editor Care About the A. G. A.?

The answer is found in a clipping from the Knoxville (Tenn.) *Sentinel* of January 22nd. It reads in part:

> Bert H. Jardine, of the Knoxville Gas Company, is the recipient of a distinctive recognition of ability, in having been appointed one of five members of a special committee of the American Gas Association. This committee, composed of gas industry experts, will study methods whereby unprofitable consumers' operations may be put upon a profitable basis. The committee is one of several to conduct organized surveys and investigations, as a part of the work of the commercial section of the American Gas Association.
>
> Mr. Jardine goes to New York next week to attend a meeting of his committee, at which time it will undertake some degree of research and will make plans for further activities.

Your local editor will print an item like this if you will take the trouble to give it to him.

Power of the Photograph

Every person likes a photograph if it contains human interest appeal. That is the reason why some newspapers and magazines have built up their circulations on photographs alone.

Today the photograph is coming into more frequent use in advertising, yet it is not used nearly as much as it should be. Advertising men in the gas industry are no doubt familiar by this time with the sales campaign carried out by the Portland (Oregon) Gas and Coke Company in placing its Gasco furnace on the market. Twelve photographs, full of human interest appeal, were utilized to show the convenience of the new furnace as compared with the drudgery and dirt of the coal and wood furnace. The photographs appeared in newspaper advertisements and now they have been gathered together in a neat little book called "The Servant Question Solved," a copy of which will be furnished by the above company upon request.

"Chatty" Advertising Talks by the Bridgeton Company

"The Gas Line" advertisements used by the Bridgeton Gas Light Company are so strikingly original that we are reproducing them here. They may be a little difficult to read because of the peculiar type style but there is no doubt but what they strike a personal note in advertising which is altogether commendable.

The company takes the public in its confidence and tells it about its sales campaigns, its service features and its faithful employees, one of whom is "Pop, a confirmed optimist." "Service After the Sale" is the slogan of the company and the story told in each advertisement is made to bring home this idea to the public.

Typical "Gas Line" Advertisements Used by the Bridgeton. New Jersey, Gas Light Company

A "Good Will" News Item

In speaking of "good will" advertisements it is also well to bear in mind that there is such a thing as a "good will" news item. Such an item found its way into the Section merely by chance the other day and it illustrates how nice the local editor can be when he really likes the gas company.

This particular item was published in a Providence, R. I., newspaper, under the heading "Gas Company Tackles Pipes to Squelch Ghost Talking." The clipping is too long to reproduce in its entirety but the first and last paragraphs will give a good idea as to its general tone. The first paragraph reads:

> The Providence Gas Company, always "at your service," came to bat today in the Pond Street "ghost" mystery and tried to solve the enigma and gave a guaranteed title for the solution. All the gas company's men did was to pump two or three quarts of water out of the gas pipes and announce that there would be no more mumbling from beneath the cellar bottom —probably. Time will tell whether the gas men are right or wrong.

The last paragraph, which reveals a rare spirit of fairness and good will, reads:

> In justice to the gas company, it should be stated that the company does not water its gas and that, without a doubt, some medium, spiritual or otherwise, injected water into the pipe in an unsuccessful effort to besmirch its fair name.

A simple story, insignificant in its news content, but who can deny that it makes friends for the Providence Gas Company?

Wanted—More Publicity Like This

The use of gas as a medium for producing steam for heating purposes is brought to the attention of plumbers and steam fitters in the publication of an illustrated article entitled, "Gas Unit System for a Garage," in the *Metal Worker, Plumber and Steam Fitter* for December 26th.

This is the kind of publicity that means better business for the gas industry and better business for the plumber and steam fitter. It is also a reminder to the plumber that he should not overlook gas-heating installations when searching for more business. It is no less a reminder to the gas man that he should not overlook the plumber.

In the same issue of the magazine there appears the third article released by the Section, quoting in part Technical Paper 242 issued by the Bureau of Mines.

How to Stop "Utility Baiting"

"Editors generally will not wilfully and knowingly print falsehoods," says the Illinois Committee on Public Utility Information, in its booklet, "A Letter About Your Business," which tells security holders what they can do to cultivate a better understanding with the public.

"When their news appears to be one-sided in relation to public utilities or to the particular utility of which you are part owner," continues the booklet, "it may not be entirely their fault. They may not know the facts. You will be doing your editor a good turn, as well as helping your own property, if you point out his errors to him—by letter if you cannot see him personally—and he will take it in good part if you are good tempered about it.

"These are practical suggestions and easy ones to follow. You can act upon them all by yourself, and every time you do so you will encourage some of your fellow security holders in this State to do the same. When any considerable number of you begin this, 'utility baiting' will stop and your utility investments will grow steadily in strength and value."

COMMERCIAL SECTION

C. A. MUNROE, Chairman — LOUIS STOTZ, Secretary — J. P. HANLAN, Vice-Chairman

MANAGING COMMITTEE 1920

At Large

BARROWS, GEO. S., Providence, R. I.
BARTLETT, C. E., (Mfr.) Philadelphia, Pa.
BENNITT, GEO. E., New York, N. Y.
BOND, C. O., Philadelphia, Pa.
BUCKMINSTER, ROLLIN, Pawtucket, R. I.
BURNS, J. J., St. Louis, Mo.
CHRISTMAN, H. S., Philadelphia, Pa.
CLARK, H. H., Chicago, Ill.
CLARK, W. J., Mt. Vernon, N. Y.
DAVIES, J. E., Chicago, Ill.
DODSON, H. K., Baltimore, Md.
DOULL, R. S., New York, N. Y.
ELSMAN, RALPH, Brooklyn, N. Y.
GASTON, LUTHER, Spokane, Wash.
GOULD, WM., Boston, Mass.
HUNTER, HARRY W., (Mfr.) Baltimore, Md.
JARDINE, BERT H., Knoxville, Tenn.
JASPERSON, R. O., Chicago, Ill.
KARSHNER G. M., New York, N. Y.
KING, THOMSON, Baltimore, Md.
KNAPP, F. H., (Mfr.) Pittsburgh, Pa.
LOEBELL, H. O., New York, N. Y.
MACSWEENEY, J. P., Rochester, N. Y.
MAXON, H. R., (Mfr.) Muncie, Ind.
MUNROE, C. A., Chicago, Ill.
MYERS, J. B., Philadelphia, Pa.
PEFFLY, I. W., (Mfr.) New York, N. Y.
PETTENGILL, H. J., Jr., Woonsocket, R. I.
PISER, THEO. H., Boston, Mass.
POST, A. P., Philadelphia, Pa.
RASCH, W. T., New York, N. Y.
STANNARD, CLARE N., Denver, Colo.
TRUMBULL, G. R., New York, N. Y.
VINCENT, G. I., Syracuse, N. Y.
WRIGHTINGTON, E. N., Boston, Mass.

Representing Affiliated Societies

BARTON, WM. H., Portland, Ore. (Pacific Coast)
BORDEN, A. W., Hastings, Nebr. (Iowa Dist.)
BOWLIN, M. A., Macon, Ga. (Southern)
BRANDES, JEROME, Chester, Pa. (Pennsylvania)
BURKE, E. J., Indianapolis, Ind. (Indiana)
CHAMBERLAIN, G. R., Grand Rapids, Mich. (Michigan)
CRAFTS, H. C., Pittsfield, Mass. (N. E. Gas Eng.)
FLAUT, J. J., New Orleans, La. (South Central)
HANLAN, J. P., Newark, N. J. (New Jersey)
MCINTYRE, W. H., Ont., Can. (Canada)
ST. JOHN, JOHN, Madison, Wisc. (Wisconsin)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Sales Development—WM. GOULD, Boston, Mass.
Compensation (Sub)—G. M. KARSHNER, New York, N. Y.
Filling in the Valleys in Gas and Appliance Sales (Sub)—WM. GOULD, Boston, Mass.
Maintenance (Sub)—ROLLIN BUCKMINISTER, Pawtucket, R. I.
Putting Non-Profitable Consumers on a Profitable Basis (Sub)—B. H. JARDINE, Knoxville, Tenn.
Sales Campaigns (Sub)—H. J. PETTENGILL, Jr., Woonsocket, R. I.
Work Schedule (Sub)—G. I. VINCENT, Syracuse, N. Y.
Gas Lighting THEO. H. PISER, Boston, Mass.
Heating—GEO. E. BENNITT, New York, N. Y.
Industrial Fuel Sales—H. H. CLARK, Chicago, Ill.
Furnace Performance Standards (Sub)—I. LUNDGAARD, Rochester, N. Y.
Improvement of Atmospheric Burners (Sub)—JEROME BRANDES, Chester, Pa.
Proportional Mixing (Sub)—CHAS. C. KRAUSSE, Baltimore, Md.
Recuperation and Regeneration (Sub)—H. O. LOEBELL, New York, N. Y.

Chairman of Committees and Sub-Committees Meet At Association Headquarters

THE chairmen of committees and sub-committees met at the Association offices on January 28 and conferred with chairman, Mr. C. A. Munroe, regarding the work of their committees.

Those present were: Messrs. Bennitt, Gould, Pettengill, Loebell, H. H. Clark, King, Jardine, Brandes, Vincent, Piser, Reynolds and Secretary-Manager Fogg.

It was decided that the chairmen of all committees and sub-committees be required to furnish monthly reports of the progress of their committees and that such reports be published regularly in the MONTHLY.

It was recommended that a Question Box be started in the MONTHLY, particularly for the publication of questions and answers relative to industrial fuel problems.

The chairman of the Industrial Fuel Sales Committee, Mr. H. H. Clark, reported at length the results of a two-day meeting of his committee, held recently at Chicago. This report was approved and follows herewith.

It is suggested that every industrial man read the report carefully and follow the recommendations made therein.

The chairmen of other committees reported satisfactory progress in the appointment of their committeemen and in following out the recommendations contained in the manual of guidance for the Commercial Section activities.

How Can the Industrial Fuel Sales Committee be of Greatest Value to the Gas Industry?

This important topic was thoroughly discussed by the members of the committee at a two-day meeting held on January 22-23 in Chicago at the office of chairman, H. H. Clark.

The members of the committee also spent a half day in witnessing a test run on a newly developed brass melting furnace, designed by the Peoples Gas Light & Coke Company of Chicago, which furnace gives every indication of real improvement over present operations.

As a result of their deliberations, it was decided that the interests of the Association and of its members would be best served by an observance of the following recommendations.

First—Association Headquarters to be a general clearing house for the collection of reliable data, with photographs, relative to successful industrial fuel installations. The information thus collected to be placed in the Association data and information files and used in answering inquiries and for general dissemination.

The data furnished to be as complete as possible and to include name of the gas company; name of the company using the appliance, with description of the problem; description of the appliance and name of the manufacturer; price and heating value of gas, approximate hourly gas consumption and quantity of material treated.

Second—All inquiries pertaining to industrial fuel problems received by members of the committee will be referred to Association Headquarters for reply.

The member of the committee receiving an inquiry will acknowledge same. stating it has been referred to association headquarters for reply. At the same time he will supply headquarters with such information and data as he may have on the subject. Thus the files of the Association will be constantly receiving new data, members will acquire the habit of submitting their industrial fuel problems direct to the A. G. A. and the Association's industrial fuel engineer will be in direct contact with actual field conditions and prospects for his services.

Third—The committee will through the Question Box of the Association MONTHLY be of assistance to members in solving their industrial fuel problems, and in suggesting ways and means for taking on industrial fuel business, whether it be for a few thousand or a million cubic feet a day installation.

Fourth—The committee will cooperate with other committees, particularly the Committee on "Filling in the Valleys in Gas Sales," as it believes there is some class of industrial business which can be secured to take care of every valley which is apt to occur in gas sales.

Fifth—Through sub-committees on "Furnace Performance Standards," "Improvement of Atmospheric Burners," "Proportional Mixing" and "Recuperation and Regeneration" work of great importance to the industry is being carried on and will be reported upon later.

Sixth—The committee believes that the Industrial Fuel Sales Department of a gas company should not be required to be on a self supporting basis, but that a definite amount per thousand cubic feet of gas sold should be allowed for the

expenses of the department and chargeable as operating expenses under new business. All industrial appliance sales and piping contracts should show a substantial profit but no attempt should be made to have such profit defray the total expense of running the department.

Seventh—Manufacturers of Industrial Fuel Appliances are requested to be careful that their advertising does not claim more for the appliance than it will perform under actual operating conditions.

Eighth—Local engineering societies, trade associations, manufacturers associations, Boards of Trade, Chambers of Commerce, local chapters of other national organizations, such as the American Steel Treaters' Society, American Foundrymen's Association, etc., are channels through which those in the industrial fuel sales department should become acquainted with engineers and persons engaged in other lines of industry, to the end that through publicity, personal acquaintance and other means, the use of gas may be extended in these industries and the American Gas Association brought to their attention as a Service Bureau available to them in the solution of their heating problems.

Ninth—Knowing that a majority of gas companies are not prepared at this time to take on large volumes of Industrial business, either on account of inadequate capacity or apparent high rates for gas; this committee has undertaken to prepare twenty short papers, (as per the following list) by men prominent in the Industrial field, on subjects of greatest possibility and interest at the present time. These papers will be of about 1,000 words each, and deal principally with Industrial uses for gas where the price of gas is not the factor. These papers will cover such lines of business which can be put on by any gas company. It is hoped these papers by their convincing arguments and essential facts will fill with enthusiasm those men who are engaged in this work, and extend gas for Industrial purposes into some of the smaller gas companies where it is not much in evidence at the present time.

1. Internal Applications of Gas Heat.
2. Brass Melting.
3. Core Baking.
4. Newspapers.
5. Smoke Houses and Butcher Shops.
6. Galvanizing.
7. Steel Treating.
8. Asphalt Melting.
9. Bake Ovens for Food Products.
10. Forging.
11. Cocoa Roasting.
12. Auto and Tire Repair Shops.
13. Drying by Heated Air.
14. Educational Institutions.
15. Water Heating.
16. Varnish Boiling.
17. Japanning.
18. Refrigeration.
19. Railroad Shops.
20. Vitreous Enameling.

These papers will be in the committee's hands by June 17th, 1920, and it is proposed to publish them shortly afterwards. It is planned to present the 12 best of them at the October Convention, allowing 6 minutes for the papers and 25 minutes for discussion .

The next meeting of the committee will be in Chicago on June 17th and 18th, 1920.

A. G. A. Industrial Fuel Engineer on a Western Tour

The re-awakening of interest on the part of many gas companies in the matter of increasing the use of gas in the industries is a gratifying indication that conditions are again getting to a normal basis.

Several western field engagements for the services of Mr. Wm. A. Ehlers, our Industrial Fuel Engineer, are keeping

(Continued on page 176.)

Window Displays and Publicity Material to Fit Sales Schedule

The Twelve Months' Sales Schedule

Attention of our members is again directed to the recommendation of the 1919 Committee on Special Sales Campaigns, wherein they suggest the adoption by all companies of the twelve months' sales schedule, contained on pages 635-36 of the November-December issue of the A. G. A. MONTHLY.

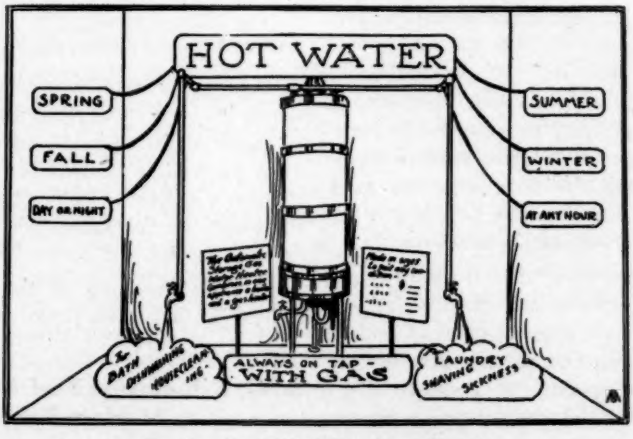
Sales effort during the second two weeks of March should be to emphasize in the minds of the consumer the convenience and hygiene of the use of hot water.

This message should be conveyed in your window displays, newspaper advertising, gas bill stickers and circular letters.

Having paved the way by proper publicity, then devote the first week in April to an intensive effort to sell gas water heaters.

The window display suggestions offered here will be helpful in creating the wish for an abundant supply of hot water.

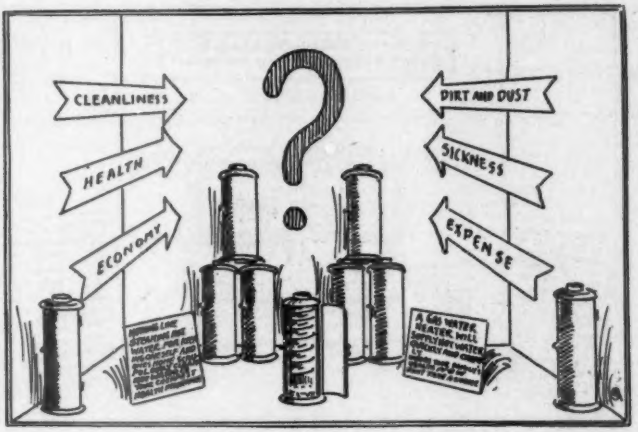
All companies are urged to follow the above mentioned schedule as closely as possible.



Display for Third Week in March

12a **Convenience of Hot Water**

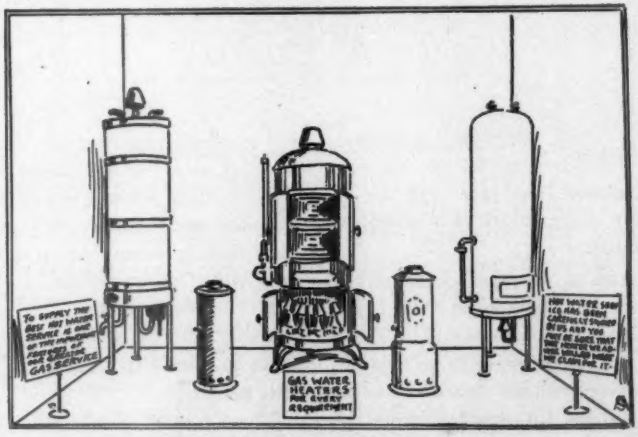
The convenience and hygiene of hot water are two strong sales features which should be emphasized in window displays for the last two weeks in March. The display shown above brings out the idea of hot water and its use throughout the year, at any hour of the day or night. The storage type of heater is used and the hot water pipes connect with spigots placed near the front of the window. Particular care should be taken in the preparation of the cards used to represent hot water coming from the spigots, in order that they may represent hot water and nothing else. The signs as well as the cards may be made in red or orange and black.



Display for Last Week in March

12b **Hygiene of Hot Water**

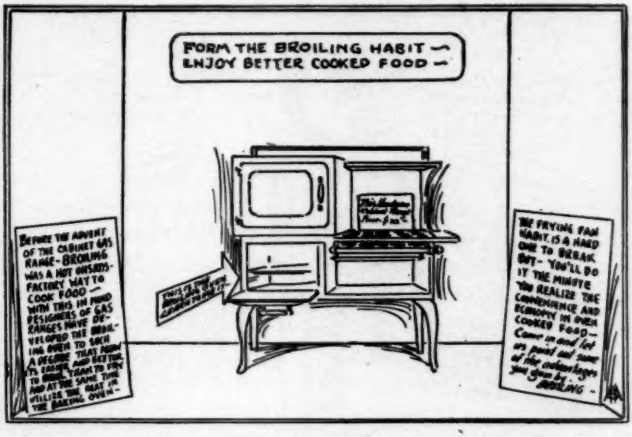
The large red question mark will center attention on the window and the words on the arrows will lead up to the subject. In arranging the window it is better to place the heaters in odd groups so that they will avoid waste of space. The printing on the large explanatory cards should be clear and legible and they should be placed at the proper angle in the window to avoid light and shade blurs.



Display for First Week in April

12c **Gas Water Heaters**

An intensive effort should be made during the first week in April to sell gas water heaters. The window display featured above is very effective because it shows several distinct types of heaters. It is not necessary to explain what the heaters do. People know that. The cards in the window are placed there to emphasize the gas company's service to the customer. Note that the two small heaters are placed forward in the window so as to balance the display.



Display for Second Week in April

12d **Broiling**

In a display of this kind, where the attention is centered on one object in the window, such as a gas range, it is necessary to have a very fine type of range on view. More important than the two placards on each side and in front of the range, is the arrow which points the way to the broiling oven. It should take the eye to the oven and keep it there momentarily at least. The placards can be worded to apply to local conditions, if it is desired.

(Continued from page 173.)

him actively engaged in a number of western plants.

Mr. Charles A. Pepper, Commercial Manager of the Sheboygan Gas Light Co. (Wisconsin), has thanked the Association for the opportunity to secure Mr. Ehlers' services which resulted in the closing of orders for several industrial appliances and paved the way for future installations along the lines mapped out by Mr. Ehlers.

Some of the conversions from coal-fired to gas that Mr. Ehlers contracted for were: One 2-section hotel range, one oven furnace, one coke-fired Japanning oven to gas, one oal-fired stereotype soft meltiug pot to gas and there is also an excellent prospect of securing two core baking ovens for a new foundry now under construction.

Mr. Pepper speaks most highly of the untiring efforts of Mr. Ehlers and is most pleased with the actnal new business secured.

The services of the association's industrial fuel engineer are available to all our member companies. The many companies which have in the past received the benefit of this service should prompt other companies to consider the advantages to them of having our industrial engineer spend some time in their territory.

MANUFACTURERS SECTION

W. GRIFFIN GRIBBEL, Chairman **GEORGE S. BARROWS, Vice-Chairman**
W. W. BARNES, Secretary

MANAGING COMMITTEE — 1920

At Large

BARNES, W. W., New York, N. Y.
BARROWS, GEORGE S., Providence, R. I.
BRILL, A. P., Pittsburgh, Pa.
BRUCE, HOWARD, Baltimore, Md.
COLLINS, D. J., Philadelphia, Pa.
CONROY, J. P., New York, N. Y.
CRANE, WM. M., New York, N. Y.
DEHART, J. S., Newark, N. J.
GRIBBEL, W. GRIFFIN, Philadelphia, Pa.
HUTCHINSON, W. G., Bridgeport, Conn.
KNIGHT, O. T., Cleveland, Ohio
LOHMEYER, H. B., New York, N. Y.
MASON, SIDNEY, Gloucester, N. J.
NORTON, HARRY A., Boston, Mass.
PEFFLY, IRVING W., New York, N. Y.
REES, RICHARD, Kalamazoo, Mich.
ROBERTS, EARL W., Detroit, Mich.
ROPER, GEO. D., Rockford, Ill.
STITES, TOWNSEND, Gloucester, N. J.
SCHALL, H. D., Detroit, Mich.
WICKHAM, LEIGH, St. Louis, Mo.

Representing Affiliated Societies

BABCOCK, C. B., San Francisco, Cal. (Pacific Coast)
BARTLETT, C. E., Philadelphia Pa. (Pennsylvania)
CHAPIN, C. H. B., New York, (Empire State)
ECCLES, GEO. W., Waltham, Mass. (N. E. Gas Eng.)
GIBSON, W. R., Toronto, Can. (Canadian)
LONG, H. J., New Brunswick, N. J. (New Jersey)
MCCULLOUGH, CHAS, Milwaukee, Wis. (Wisconsin)
MILLER, THOS. D., Detroit, Mich. (Illinois)
SEIDENGLANZ, C. H., Dallas, Texas. (So. Central)
SCHALL, H. D., Detroit, Mich. (Michigan)
WARREN, W. M., St. Louis, Mo. (Iowa Dist.)
WESTON, J. A., Lansing, Mich. (Indiana)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Membership—WM. M. CRANE, New York, N. Y.
Apparatus Makers—D. J. COLLINS, Philadelphia, Pa.
Nomination—WM. M. CRANE, New York, N. Y.
Exhibition—W. GRIFFIN GRIBBEL, Philadelphia, Pa.
Trade Acceptances (Joint Com. with Acc. Sect.)—GEO H. WARNER, New York, N. Y.

"Success waits upon ability and loyalty, Let's go!"—*Geo. B. Cortelyou*

The Seal of
STANDARD PRODUCT AND ASSOCIATION SUPPORT

All company members, Manufacturers Section, are urged to use the above emblem on all stationery, catalogues and literature as company members of this Association.

Trade Acceptances

THE Joint Committee on Trade Acceptances from the Manufacturers Section and the Accounting Section at a meeting held January 23 endorsed the use of Trade Acceptances and recommends their use by utility companies. The Manufacturers Section has referred the Recommendation to the Executive Board for such action as they may deem advisable on this form of settlement.

Vote on Exhibitions Other Than A. G. A.

By a referendum vote of the Section the following resolution was adopted at the meeting of the Managing Committee, January 28, on exhibitions other than the A. G. A.

> *Resolved*, That on and after June 1, 1920, Manufacturer Company Members of the American Gas Association will not exhibit at any other exhibition than the Annual Exhibition of the American Gas Association; it being understood that the above does not apply to the meetings of the Natural Gas Association and the Pacific Coast Gas Associations.

This action was brought about through a misinterpretation of a resolution previously in effect in which the wording was such as to discourage exhibiting at

exhibitions other than the Convention of the A. G. A. It was the result of previous experience in the years during which the N. C. G. A. was in existence wherein the making of appliance exhibits at gas association meetings throughout the country became a serious hindrance to the administration of traveling forces and maintenance of low costs, and, further to show that the will of a minority in control had not been imposed on an inarticulate majority. The vote fully demonstrates the expressed wish of the majority.

A communication has been sent to the Secretaries of all state and district gas associations explaining fully the situation and earnestly soliciting their consideration of this decision and asking that they bear with us in the accomplishment of harmonious cooperation in this matter.

Sales Schedules

The attention of manufacturers is called to the Sales Schedule of the Sales Development Committee (Commercial Section) as published in the November-December A. G. A. MONTHLY for the year 1920. Manufacturers should use their utmost endeavors to tie-up their advertising and window display helps in order to successfully carry out this schedule in cooperation with commercial departments.

Divisions of Manufacturers

Company Members of the Manufacturers Section are to be grouped into divisions, each division electing its chairman. This plan is intended to overcome any lost motion by grouping manufacturers whereby problems pertinent to their particular product can be discussed and conclusions reached to be then acted on by the Section. The following appointments have been made to call together representatives of groups to promptly form divisions and elect their chairman:

Water Heater Division
H. J. LONG

Industrial
S. TULLY WILLSON

Ranges
W. M. CRANE

Meters
H. A. NORTON

Apparatus
J. S. DEHART, JR.

Heating
G. S. BARROWS

Lighting
J. P. CONROY

Office Labor Saving Devices
H. B. LOHMEYER

Expositions

The Managing Committee has inaugurated a new form of publicity whereby at a minimum pro rata expense all manufacturers can benefit by group action in bringing before consumers standardized gas appliances for installation in the home.

Our Membership Campaign Is Launched

Honor Roll

GEORGE W. PARKER,	St. Louis, Mo.	5 Manufacturer Company Members
CLARENCE H. FRENCH,	New York, N. Y.	1 Manufacturer Company Member

The real Association BOOSTERS will be found listed each month in the HONOR ROLL

REMEMBER OUR GOAL—300 MANUFACTURER COMPANY MEMBERS

Before July 1st. 1920

Do Your Part **Team Work Will Tell**

Space has been contracted for at the "Own Your Home Exposition" to be held at Grand Central Palace, New York City, May 1 to 8.

The exhibit will be in the name of the American Gas Association, Manufacturers Section, and will be attended by a representative of the Association Staff during the entire period, who will answer inquiries and distribute advertising literature of manufacturers interested in products pertaining to

Home Economics

- Lighting
  - Fixtures and Lamps
- Heating
  - Gas Logs
  - Radiators
  - Boilers for House Heating
  - Room Heaters
  - Garage Heaters
  - Incinerators
  - Laundry Stoves
  - Gas Irons
- Cooking
  - Ranges
  - Hot Plates
- Water Heaters

If this initial plan is successful the same plan will be repeated at the

American Steel Treaters Society,
Commercial Museum, Philadelphia, Pa.
September 13-18, 1920.

National Exposition of Chemical Industries,
Grand Central Palace, New York City,
September 20-25, 1920.

Hotel Men's Exposition,
Grand Central Palace, New York City,
November 8-13, 1920.

March Meeting

A meeting of Manufacturer Company Members will be called for March 18, at Hotel Sherman, Chicago, Ill., to permit of acquainting western members of the activities of the Section since the October meeting.

Surface Indications

AT diminishing intervals one hears the question "Where are all the Commercial men?" The various answers depend upon time, place and audience, but all of them weave in some allusion to the action gas companies took when wartime economy stared them in the face. Almost everybody knows where the axe of curtailment fell first and fell heaviest; and, it must be admitted, the stroke seemed supremely logical. As a result, that element in the gas industry to which has confusingly been applied the terms "Commercial," "New Business" and "Sales" is not with us in the numbers and voice of pre-war years. It is a matter of keen regret that this prompt casting loose from the payroll must have lost to them the sense of family membership, of *belonging*.

These men, after the interruptions of the war, are probably to be found somewhere at the selling end, not, however, in the old groove; most probably where more selling is going on. A brief reference to silk shirts, super-clothes, furs expensive and of execrable taste, talking machines, and automobiles, completes the picture. These are some of the myriad channels through which bursting pressure on the pocketbook of the millionaire riveter is being relieved. There have been editorials in the daily press and articles in the national weekly and monthly magazines on the feverishness with which Labor is spending its easy money since the war.

Is it not a pity that the gas industry must go hungry in the midst of such abundance? It is not fault of character

in the industry today. It may be due to inertia. But it is unquestionably true that the most pressing problem of the industry today is the elimination of that suspicion and recoil evidenced by communities everywhere towards the companies serving them in any capacity who cite charter or franchise as representing capital value? The present restlessness and cupidity have contributed largely to the industry's inability to get from the public such a rate as would enable it to attract the investment necessary to increased production and thus to absorb its share of the present buying.

This is not only why the hosts of commercial men have disappeared, but it is also why they are not trying to get back, or even being invited to return. The commercial men—like the blue birds—will return to us when "the winter of our discontent" has passed; and that shortly.

There is a possibility, however, that the gas company will not again have the control it has had of the movement of gas burning merchandise to its consumers. This is so obvious as to deserve but the briefest of allusions. If the gas company won't sell, and the consumer will buy, the manufacturer of appliances will be bound to sell through other agencies. This by-passing of the gas company has already started.

These other agencies think more of moving goods than of what the goods may do to the buyer. They are simon pure merchants, do not possess the scruples of the engineer, and they talk a language the manufacturer understands supremely well.

Keep this in mind for a time and watch the big holder drop when the house-heating load approaches maturity instead of its present potentialities.

And then what? The voice of the soap box orator, or insidious 'boring from within' having curdled the good judgment of the community, relief is sought in the evanescent panacea of municipal ownership, wherein operating costs are camouflaged as taxes; and the fat is in the fire. Of course, it probably won't all come to pass just that way; but isn't it curious the Railways haven't cried more for the return of their properties?

The antidote is surely *Publicity!*

Not 15 per cent. of the public understand, and just now, because of that fact, not 50 per cent. want to understand. It is to our interest chiefly that they be made to understand. The vox populi will express its preference for fair play; but it must first be made articulate. Herein is a responsibility, and we do not seek to evade it. There are men who are fighting the battles of the whole industry, doing it quietly, effectively with such fairness and decency as to win appreciation, not antagonism.

But beware the Manufacturer! He may run away with the industry and make it prosperous in spite of itself.

Obituary.

Mr. Daniel J. Prendergast,
General Superintendent,
Welsbach Street Lighting Co. of America,
425 Gates Avenue,
Brooklyn, N. Y.

Mr. R. N. Strohn,
Vice-President and Treasurer,
Western United Gas & Electric Co.,
36 Lincoln Way,
Aurora, Ill.

Mr. R. Y. Conklin,
Gas Engineer,
Gas & Electric Improvement Co.,
77 Franklin Street,
Boston, Mass.

TECHNICAL SECTION

L. R. DUTTON, Chairman — W. S. BLAUVELT, Vice-Chairman

H. W. HARTMAN, Secretary

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MACBETH, G. T., Mt. Vernon, N. Y.
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HUMPHREYS, J. J., Montreal, Canada. (Canada)
JONES, E. C., San Francisco, Cal. (Pacific Coast)
JONES, JACOB B., Bridgeton, N. J. (New Jersey)
LYONS, B. F., Beloit, Wisc. (Wisconsin)
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SEDBERRY, W. H., Marshall, Tex. (South Central)

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Purification—C. H. STONE, Rochester, N. Y.
Consumers Meters—W. A. CASTOR, Philadelphia, Pa.
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Vice-Chairman, R. A. CARTER, Jr., New York, N. Y.
Refractory Materials—W. H. FULWEILER, Philadelphia, Pa.

Mid-West Conference of Technical Section to be Held in Chicago, March 19, 1920

THE Executive Committee of Five appointed to consider questions arising between the general conferences of the Section held its first meeting at Association headquarters, January 28, 1920.

The most important action taken by the Committee was the decision to hold the next general conference of the Section at the Hotel La Salle, Chicago, Ill., March 19, 1920, the day after the meeting of the Illinois Gas Association.

In addition to a morning meeting of members of Section committees a session will be devoted to reports of committee progress and topics of particular interest to the technical men of the industry. Advance suggestions from our members as to timely subjects will be gladly received by the Secretary.

Particular attention is called to the fact that attendance at the Mid-West Conference of the Section is not confined to members of committees. A cordial invitation is extended to all members of the Section and it is hoped especially that those located adjacent to Chicago can arrange to be present. Through the

conferences an opportunity is afforded to keep the general membership more closely in touch with the committee work and to obtain constructive suggestions on the program being carried out.

Members who plan to attend the conferences are advised to arrange their trip so as to be present at the Convention of the Illinois Gas Association, March 17-18. The program for this meeting was printed on page 78 of the February issue and the discussion of the subjects listed will amply repay the extra time required for attendance.

The Executive Committee also authorized the appointment of a Papers Committee to select authors and subjects for Technical papers.

The following reports of progress from Section committees were received:

Carbonization Committee

The Carbonization Committee of the American Gas Association for 1920 has been organized on the following lines: There are three principal sub-divisions, namely:

1. Progress in carbonization methods and results.
2. Producers, as applied to carbonizing units of the gas industry.
3. Coke.

With such a widely distributed membership it would seem very difficult to get the entire Committee together at one locality. It has therefore been decided to make a geographical division of the work, say, on an approximate line through Cleveland and Cincinnati. These two cities, with their various industries devoted to gas should come under the western section of the Committee. The first names in each of the following lists will be the collecting medium for his group.

Progress in Carbonization Methods and Results

East

A. W. Warner, Philadelphia Suburban Gas & Electric Co., Chester, Pa.

F. C. Weber, H. L. Doherty & Co., 60 Wall St., New York, N. Y.

J. J. Humphreys, Montreal Light, Heat & Power Consd., Montreal, Quebec, Can.

West

J. A. Brown, Hodenpyl, Hardy & Co., Commonwealth Bldg., Jackson, Mich.

H. C. Wehnert, Laclede Gas Light Co., St. Louis, Mo.

F. W. Seymour, Calhoun Gas Co., Battle Creek, Mich.

Producers Division

East

A. S. Hall, Springfield Gas Light Co., Springfield, Mass.

C. J. Ramsburg, Koppers Co., Pittsburgh, Pa.

H. L. Underhill, Bartlett-Hayward Co., Baltimore, Md.

W. D. Stewart, Fall River Gas Works Co., Fall River, Mass.

West

Bruno Rahn, Milwaukee Gas Light Co., Milwaukee, Wisc.

A. I. Snyder, Detroit City Gas Co., Detroit, Mich.

R. H. Lawlor, Michigan Light Co., Flint, Mich.

J. A. Brown, Hodenpyl, Hardy & Co., Jackson, Mich.

Coke Division

East

F. C. Freeman, Providence Gas Co., Providence, R. I.

J. H. Taussig, U. G. I. Contracting Co., Philadelphia, Pa.

C. J. Ramsburg, Koppers Co., Pittsburgh, Pa.

West

A. H. Harris, Jr., Coal Products Co., Joliet, Ill.

Chemical Committee

The Secretary reported that an all day session of the Chemical Committee had been held at Association headquarters, January 22. Criticisms of the revisions of the various chapters of the Gas Chemists' Handbook were considered and recommendations adopted for the guidance of the Editorial Committee.

All chapters of the Handbook are now ready for the consideration of the Editorial Committee excepting the subjects originally assigned to Mr. R. S. McBride. Of these Mr. A. C. Fieldner is preparing the section on analysis of gas.

Consumers Meters Committee

In addition to report published in the February MONTHLY a record was made of the appointment of Mr. G. I. Vincent, Syracuse Lighting Co., Syracuse, N. Y., as a member of the committee. Mr. Vincent will also act as the representative of the Consumers Meters Committee on the Commercial Section Committee on Work Schedule.

Committee on Disposal of Waste from Gas Plants

Mr. Willien reported that a meeting of his committee had been held at Association headquarters, January 22.

In connection with separators for separating oil and tar from the water effluent of a gas plant a special investigation will be undertaken to develop a quick test on this water which would give an indication of the efficiency with which the separator is working. A report on this method will be made at the next meeting of the Committee.

The Chairman reported that only 10 replies had been received to the letter sent some time ago to company members of the Association requesting them to advise the committee as to existing or proposed legislation in their states covering the pollution of streams by industrial plants. These replies covered the States of Wisconsin, Iowa, Texas, Maryland, California, Rhode Island, Nebraska, Tennessee, Connecticut and New York. As the committee's files should be as complete as possible members having knowledge of legislation in other states are requested to communicate with the Chairman regarding it.

Purification Committee

Mr. Stone reported that a meeting of his committee would be held on February 4. (Action taken at this meeting is reported later in this Section).

Association Membership Campaign

The hearty cooperation of the members of the Section was pledged in support of the campaign to increase the company and individual membership of the Association. It was agreed that all personal contact which the members might have with non-member companies or individuals should be utilized to impress such prospects with the advantages of membership in the Association.

The next meeting of the Executive Committee will be held late in February at which plans for the Mid-West Conference will be completed.

Purification Committee Meets

The first meeting of the Purification Committee was held at Association headquarters, February 4, with the following members present: H. O. Andrews, H. R. Cook, Jr., C. E. Littel, J. Van G. Postles, Dr. Alfred R. Powell, Bureau of Mines; Dr. J. F. Wing and H. W. Hartman, Secretary.

A letter from the Chairman (who had been unable to attend due to illness) was read in which he requested that the Committee select certain problems bearing on the basic principles of purification and

assign these problems to the various members.

The following problems were assigned:

(*a*) Alkalinity of Oxide
C. H. Stone, Rochester, N. Y.

1. Why is it necessary and what does it do?
2. How alkaline should oxide be?
3. What effect does revivification have on alkalinity and is it necessary to add further alkali after revivification in order to secure the best results?
4. What is the best method for making oxide alkaline?

(*b*) Hydration of Oxide
Leigh Worthing, Detroit, Mich.

1. Is it necessary?
2. The best amount of hydration.
3. What happens (*a*) when hydrated?
   (*b*) when not?
4. Does it become hydrated on revivifying?
5. Method for determining hydration.

(*c*) Best Temperature of Reaction
H. O. Andrews, Springfield, Mass.

Other chemical and operating problems were discussed but not definitely assigned.

Dr. Powell reported a special study was being made by W. A. Dunkley of the Illinois Geological Survey in cooperation with the Illinois Gas Association on gas purification with particular reference to Illinois coals. This investigation is largely confined to purification materials and a report on same will be submitted at the coming Convention of the Illinois Association.

The Bureau of Mines, Dr. Powell stated, was at present working on the sulphur content of coal in the carbonization process. A working agreement has been entered into by the Bureau of Mines, Johns Hopkins University, and the United Gas Improvement Co., to conduct experiments in the near future on the amount of organic sulphur from gas coal that enters into the composition of the gas in addition to H_2S. The Bureau also plans in the future to investigate methods of purification other than the ordinary iron oxide process such as liquid purification, etc. Dr. Powell agreed to contribute to the committee's report an account of any of the above investigations which would have a direct bearing on gas purification practice. Close cooperation will also be maintained by the committee with the work of Mr. W. A. Dunkley of the Illinois Geological Survey and the Illinois Gas Association so that no duplication will occur.

The Committee will be glad to receive suggestions from the members as to purification problems arising in their plants or as to investigations which the committee should undertake with a view to developing a better understanding of the basic principles involved in the purification of gas.

*Checker Brick Cleaning Test

A TEST to determine a better and more economical method of cleaning checker brick was conducted at 115th Street and 21st Street Works. At 115th Street comparison was made between hand cleaning and an electric hammer consisting of a ½ H. P. motor operating the hammer mechanism to deliver a rapid succession of blows to the chipping tool.

The work of cleaning brick is done at a portable steel bench which may be moved from one machine to another as

* Reprinted by courtesy of Society of Gas Engineering, New York City.

required and so designed as to hold rigidly a quantity of the brick to be cleaned.

Provision is made for properly counterweighting the hammer so as to take the weight from the operator.

Two men are required, one for arranging, turning and piling the brick and the other to operate the hammer. A comparative test was made on a quantity of medium carbonized carburettor checker brick, the results of which are shown in the table.

At 21st Street two mechanical methods were compared with hand cleaning: one a rotary scraper and the other a pneumatic hammer.

The Rotary scraper consists of a ½ H. P. motor to which a flexible shaft about six foot long is connected. The scraper or hammer which is driven by the flexible shaft is made up of three rows of five steel "fingers", spaced 120 degrees apart around the shaft. A metal guard is provided to protect the operator from flying chips or scale, but this is not an adequate shield in case one of the steel fingers should break and fly off.

The machine has been used for scraping ship bottoms before painting and for that or similar purposes it is probably satisfactory, but for cleaning checker brick it was not a success.

The motion of the scraper, being rotary the encrustation cannot be chipped off the brick in large pieces but must be ground practically to a powder, so that the operator works in a cloud of dust.

Two scrapers were completely worn out in cleaning 2924 brick and as these cost $8.00 each it makes the use of such a device prohibitive.

The air hammer is a light scaling hammer. One advantage of this tool over the rotary scraper is that no matter how badly carbonized the brick may be it can be quickly cleaned, because the chipping tool is applied to the surface of the brick and the encrustation is forced off in large pieces.

The conclusion arrived at as the result of these tests is that both the air hammer and the electric hammer are superior to the rotary scraper. Where compressed air is available it would appear that the air hammer is to be preferred because of lower first cost and less liability to get out of order.

The apparent operating cost of the electric hammer is 2½ cents per hour as compared to 6½ cents per hour for the air hammer. This does not take repairs into consideration which undoubtedly would be higher with the electric hammer. Also where air pressure is constantly maintained it is probable that a small hammer would, many times, use air which would otherwise be wasted through the safety valve.

The following table shows the results of the test:

	Hand labor		Air hammer	Electric hammer	Rotary scraper
	21 St.	115 St.	21 St.	115 St.	21 St.
Number of brick cleaned	3,438	773	2,070	2,205	2,924
Brick cleaned per man per hour .	56.4	34.0	57.5	67.0	64.0
Cost per M. brick cleaned	$7.89	$12.50	$8.18	$6.55	$13.27

NOTE: The cost of the two hammers worn out is included in the figure of $13.27 per M. for the rotary scraper and also the electric current used.

The air used by the air hammer and the current used by the electric hammer are also included.

The Committee believes that where checker brick are badly carbonized the air or the electric hammer can be used to advantage, but when they are only slightly encrusted they can be cleaned more economically by hand. Superheater brick are rarely ever more than dusty, so hand labor is undoubtedly

cheaper and quicker than any of the other methods tested for cleaning these brick.

Discussion Contributed by W. J. Hawthorn on Cleaning Used Checker Brick

A test was made recently at the "C" Plant, Astoria Works, to determine the comparative cost of cleaning checker brick by hand and by mechanical means. The power tool used was a pneumatic hammer, designed for riveting and cutting purposes, equipped with a chisel with a 2 inch face.

A number of used checker brick, all with about the same amount of carbon deposit were selected and after a run of several hours it was found that with the power driven tool about 7 per cent. more brick could be cleaned than by hand. Checker brick with slight or soft deposits, mostly dust, can be cleaned more economically by hand.

The writer has in mind the advisability of considering the cause of carbon deposits, with a view of reducing same and therefore increasing the life of the brick. Periods of unduly high temperature in the set, due to long cleaning periods, over blasting, etc., are factors to be considered. Inattention of gas-makers to temperature conditions of the set, the running of oil when the heats are above the normal for the proper gasification of the oil, result in carbon deposits.

RECENT ARTICLES IN CHEMICAL PRESS OF INTEREST TO GAS MEN

Contributed by Sub-Committee on Abstracts* of the Chemical Committee

THE ABSORPTION OF GASES IN SPRAY SYSTEMS AND TOWERS. By Edwin M. Baker, *Chem. and Met. Eng.*, Vol. 22, No. 3, Jan. 21, 1920, p. 122-4. A theoretical discussion of the principles applying to the absorption of gases in liquids. Also experimental data and curves on the absorption of ammonia in water from mixtures of ammonia gas and air. (David L. Jacobson.)

FUSIBILITY OF COAL ASH FROM EASTERN COALS. By W. A. Selvig, O. C. Brown and A. C. Fieldner, *Chemical and Met. Eng.*, Vol. 22, No. 2, 80-81 (Jan. 14, 1920). Data are given, based on tests by the U. S. Bureau of Mines, on fusing temperatures of coal ash from Eastern coals, including coals from Ohio, Eastern Kentucky, Tennessee, Maryland, Alabama and Virginia. (David L. Jacobson.)

RESISTANCE OF ABSORPTION TOWER PACKING TO GAS FLOW. By Fred C. Zeisberg, *Chemical and Met. Eng.*, Vol. 21, No. 15, 765-766 (Dec. 24-31, 1919). Experimental data on the resistance of tower packings to gas flow under various conditions, giving also the per cent. of free space, surface square feet per cubic foot, weight in pounds per cubic foot, and number of units per cubic foot. Data includes figures on quartz, coke, diaphragm rings, corrugated spiral rings, corrugated Hechenbleikner blocks, Raschig rings, and tile. By means of the constants given, the resistance to gas flow can be calculated in designing absorption towers with a certain packing. (David L. Jacobson.)

* Abstractors' names appear in brackets following each item.

Gas and Steel

SOME FACTS AND FIGURES ON THE HEAT TREATMENT OF HIGH AND LOW CARBON STEEL

BY W. A. EHLERS, M. E.

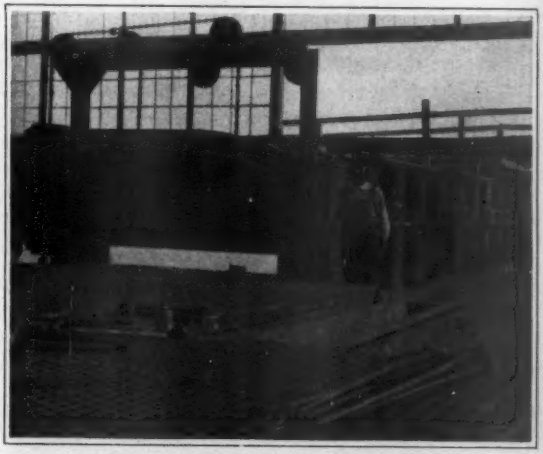
[EDITOR'S NOTE.—This article appeared in *Scientific American* for February 7, 1920, and it is the first of a series which will be written for that publication by Mr. Ehlers. Reprints of the articles as they appear may be had upon request to Association Headquarters.]

IN the following considerations given to the subject of the heat treatment of low and high carbon steel, it is the aim of the writer to treat the subject from the view-point of practical shop operations, and to eliminate theoretical discussion as far as possible. It should be noted, therefore, that no attempt will be made to treat the subject in an exhaustive manner.

It is also assumed that furnaces used for the heat treatment of steel are of the proper design and construction, and that in order to produce the best heating conditions with reference to the character of the furnace atmosphere and control of the temperature, only such fuels are to be used that will give the *right* results for the class of work in hand.

The right results in any heating operation can only be obtained by means of a positive and accurate control of the combustible mixture. Fuels other than gas do not as a rule permit of the close regulation and control of the air-gas mixture that is necessary to control these results.

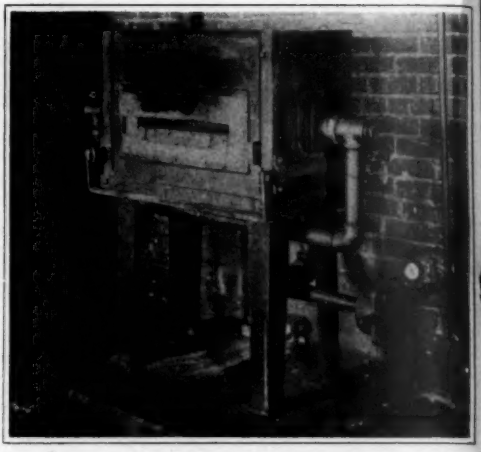
The human element plays an important rôle in all heat treating processes. Not only is it important to be well acquainted with the chemical composition of steel, the generation and application of heat, but it is also very essential to know the effect of different temperatures, furnace conditions, and methods of cooling upon the constituents of the steel. Absence of such knowledge often results in placing the blame on the steel or the furnace if proper results are not obtained. It is due to this same human element or skill in metal treating that one manufacturer is able to produce a far superior grade of article than his competitor at no greater cost. For this reason he may be justified in guarding such so-called "tricks" with great secrecy.



Gas Fired Plate and Angle Furnace

The skillful application of engineering principles to the design of modern machinery in the last decade has not only brought out the necessity for correct applications in heat treating methods, but has witnessed also the development of special alloys of steel, for particular mechanical purposes. Moreover, the results obtained in heat treating these steels

have demonstrated the necessity for greater precision in temperature measurement; consequently the old method of judging temperatures by varying shades of color has given way to more exact pyrometer determinations.



Standard Gas-Fired Forging Furnace

Composition of Steels

Steel is an alloy, a chemical compound of iron and carbon united in varying proportions according to the grade of the steel. It contains about 1 per cent of impurities in the form of manganese, phosphorous, sulphur and silicon. The carbon content varies from about 0.04 of 1 per cent to 2 per cent; the remainder is iron. In addition to the iron, carbon and impurities, some steels contain chromium, tungsten and vanadium, which are added to produce certain results.

Carbon steel is divided into two general classes—low carbon or machinery steel, and high carbon or tool steel. Low carbon steel is soft, ductile and does not harden readily; on the other hand high carbon steel is harder, less ductile and has remarkable hardening power. The strength and utility of steel varies according to the per cent of carbon it contains. The following classification of usage represents good average practice:

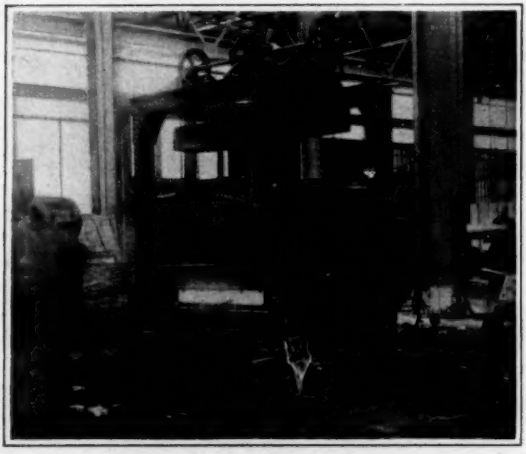
Machinery steel contains from 0.04 to 0.15 per cent carbon.

Boiler plate and rivet steel has from 0.15 to 0.38 per cent carbon.

Tires, axles, rails, pistons, from 0.38 to 0.62 per cent carbon.

Cutting tools for soft materials and files from 0.62 to 0.88 per cent carbon.

Heavy cutting tools, bits, chisels and mandrels from 0.88 to 1.5 per cent. carbon.



Gas-Fired Forge for Shipliners

As has previously been stated all steels are an alloy of iron and carbon, the chemical combination of which is of great importance in the study of subsequent heat treating processes. The amount of the carbon content has a very pronounced influence upon the structure of the steel, which when placed under the microscope presents a granular appearance. During the cooling process in the manufacture of steel, the carbon content always combines with a definite amount of the iron, to form what is chemically known as carbide of iron. This combination presents a structure or

grain of the metal very noticeable under the microscope and is known as cementite. The remainder of the iron free from carbon is called ferrite. Then again the cementite will form a mechanical mixture with the ferrite, in which the ferrite and cementite will appear in alternate stratas or layers and this is termed pearlite. The relation between these three compounds is such that all steels, very low in carbon, are made up almost entirely of ferrite or iron, with a very small per cent of pearlite. As the carbon content is increased the pearlite increases with a corresponding decrease in ferrite, until the steel has reached 0.85 per cent carbon, when the ferrite will disappear and it will be entirely pearlite. After this point, cementite will appear, and a further increase in carbon will cause an increase in cementite with a corresponding decrease in pearlite. This relation is clearly indicated by the diagram shown above. Thus it will be noted that a steel containing 0.6 per cent. carbon will be made up of about 67 per cent. pearlite and 33 per cent. ferrite.

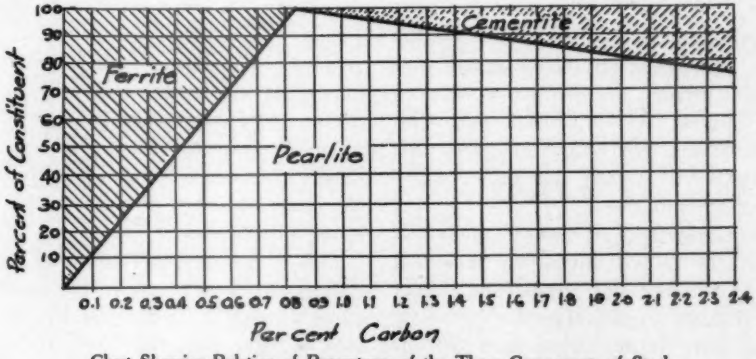


Chart Showing Relation of Percentages of the Three Components of Steel

In order that steel may be useful for many mechanical purposes its structure must be changed. In other words, the relation between the ferrite, pearlite and cementite must be different from that found after the steel has cooled in its manufacture. This change is brought about by various methods of heating and cooling. Such changes, while interesting to study, are too complicated perhaps to be described here. It should be remembered, however, that all successful steel treating operations depend upon an appreciation of what takes place in the structure of the alloy under the action of heat and the various cooling methods.

The Action of Heat

The action of heat upon the pearlite, ferrite or cementite varies according to the percentage of the carbon content, hence according to the relation these substances bear to one another. It causes a transformation of the above constituents, which may easily be seen with the aid of a microscope. The ultimate result, if the steel is heated beyond a certain point, is to form a new constituent known as austentite. Now if the steel is allowed to cool slowly from the temperature at which this new structure appears, it will go back to the original state in which it occurred before heating. In the slow cooling process, however, there are certain characteristics brought out which are worthy of consideration; the transition taking place after the austentite stage is passed, is in the following order: Martensite, Troostite, Osmondite, and

Sorbite, each stage denoting a corresponding softer state of the alloy. This may be likened somewhat to the behavior of water when made to freeze into ice and then melted back into water, the constituents in this case, however, remain the same but appear in a different form, while with the constituents of the steel there is a constant change taking place while the steel is undergoing a change in temperature.

One of the most important points to be given careful attention in all heat treating operations, is that of the *"critical range"* of the steel, known as the "upper" and "lower" critical range. These values are not constant but vary according to the carbon content in the steel. The lower the percentage of carbon the greater the difference between these ranges. As the carbon content increases these two ranges approach one another until at 0.85 per cent. carbon they merge into one.

The significance of this characteristic in the steel is that during the period of heating between the lower and upper critical range a transformation is rapidly taking place in the constituents of the steel, which begins at the lower critical range, and is completed at the upper critical range. In steel containing 0.85 per cent carbon, this transformation takes place immediately, while for percentages above this amount the transformation is slow.

It is important, therefore, to understand this characteristic of steel if the best success is to be obtained in all heat treating work. For complete annealing and hardening it is necessary to know the upper critical ranges in order not to exceed that point. Heating and cooling below this limiting temperature will not give full and complete results and exceeding it more than 50 degrees F. will likewise produce inferior work, by increasing the granular structure of the steel and thus causing brittleness.

Forging

There is probably no heat treating operation in use in which the principles of correct heat application are more abused than that of forging. Here again one would conclude from observing the majority of forging fires in operation that speed and not quality is the aim of the manufacturer. In the majority of forging work today, the steel is heated in oil-fired furnaces, the coal and coke fire having been abandoned on account of their slowness and irregular heating of the metal. A large number of forging furnaces are "makeshift" affairs constructed by a mason with an oil burner applied at one or both ends with little or no thought for economy or quality of the finished product. Such furnaces will produce uneven heating especially where the flame impinges directly on the work nearest the burner.

One of the greatest faults with modern forging work is found in the desire for rapid heating. Under the action of a very intense heat the steel is made to "run" or drip on the exterior before the interior has become properly soaked, consequently there exists a core in the bar which when placed under the hammer does not forge properly. It is very important, in order to obtain the best results, that the work should be heated slowly in a soft, reducing atmosphere. Forging temperatures should range from 1,500° F. for high carbon steel to 1,800° for low carbon steel. But instead of these temperatures we find more forging being done at "white heat" which is probably nearer 2,500° F.

High speed steels for cutting tools should never be forged. It is far more economical to turn down such tools from bar stock if the best product is to be ob-

tained. There are, however, quite a large number of such tools being made today by forging operations. A well-known steel drill is being made in all commercial sizes and in large quantities, where the flat stock is heated and twisted into the proper shape and size. They are then hardened and ground to the proper dimensions. The temperature for forging such tools is usually from 2,000 to 2,200 degrees F. and in the product just referred to there is very little hammering done to the steel.

After forging, all steels having cutting edges or bearing surfaces should be reheated to a temperature of from 1,400 to 1,500 degrees F. and allowed to cool slowly. After this operation they must be ground in order to remove a thin coating of decarburized iron existing in all hot rolled steel, otherwise if this surface is allowed to remain, it will prevent hardening.

Until recently the utilization of gas for forging has been considered too expensive in comparison with coal, coke and oil due principally to the lack of efficient gas-heated furnaces.

A highly satisfactory and efficient gas-heated forge is now obtainable, and a number are in actual operation. The furnace is much easier to operate than those heated with other fuels, and requires practically no attention after the desired working conditions are obtained. The burners are supplied by an air-gas automatic proportioning device, which gives a homogeneous mixture, and they can be adjusted to give a slightly reducing furnace atmosphere in order to minimize the formation of scale.

A furnace of the above type was installed recently in the plant of a Philadelphia manufacturer, and after making comparisons between it and a coal-fired furnace, the following results were obtained:

	Coal-fired furnace	Gas-fired furnace
Number of pieces handled per 9-hr. day	1,400	2,122
Overall efficiency	6.84%	25.23%

The increased production and superior operating advantages were sufficient to offset a slightly higher fuel cost.

The great advance in the shipbuilding industry during the war gave rise to many innovations. One of the outstanding features of this development was the substitution of gas for fuel, replacing fuel oil in a number of forging operations. Four or five yards adopted it on an extensive scale, and two yards used it exclusively, except for a small amount of coke used in portable rivet heaters.

Gas and the Plumbing Trade

FORTHCOMING meetings of the Master Plumbers Associations of several States are listed below for the information of Gas Companies who recognize a field for profitable cooperation in the plumbing fraternity.

Indiana Society of Sanitary Engineers, Annual Convention; Richmond, March 8th, 9th and 10th.

New York State Association of Master Plumbers, Annual Convention; March 9th and 19th. City to be announced later.

Missouri State Association of Master Plumbers, Annual Convention; St. Joseph, March 15th and 16th.

Nebraska State Association of Master Plumbers, Annual Convention; Lincoln Hotel, Lincoln, March 17th, 18th and 19th.

Kentucky State Association of Master Plumbers, Annual Convention; Louisville, May 10th, 11th and 12th.

Pennsylvania State Association of Master Plumbers, Annual Convention; Penn-Harris Hotel, Harrisburg, May 18th and 19th.

National Association of Master Plumbers, 38th Annual Convention; William Penn Hotel, Pittsburgh, Pa., week beginning June 13th and ending June 20th.

Associations Affiliated with A. G. A.

Canadian Gas Association

Pres.—V. S. McIntyre, Kitchener, Ont.
V.-Pres.—C. S. Bagg, Montreal, Que.
E. H. Caughell, St. Thomas, Ont.
Sec.-Tr.—G. W. Allen, 19 Toronto St., Toronto, Can.
Conv., 1920.

Empire State Gas & Electric Association

Pres.—Horace L. Mann, Buffalo, N. Y.
V.-Pres.—H. W. Peck,
C. G. M. Thomas.
Treas.—E. H. Rosenquest.
Sec.—C. H. B. Chapin, 29 W. 39th St., New York, N. Y.

Illinois Gas Association

Pres.—H. S. Whipple, Rockford, Ill.
V.-Pres.—W. M. Willett.
Sec.-Tr.—R. V. Prather, DeWitt-Smith Bldg., Springfield, Ill.
Conv., 1920, March 17-18, Hotel Sherman, Chicago, Ill.

Indiana Gas Association

Pres.—R. A. Ziegler, Anderson, Ind.
V.-Pres.—J. D. Forrest.
Sec.-Tr.—E. J. Burke, Citizens Gas Co., Indianapolis, Ind.
Conv., 1920, April 28.

Iowa District Gas Association

Pres.—Geo. D. Roper, Rockford, Ill.
V.-Pres.—W. H. Taylor,
C. N. Chubb.
Sec. Tr.—H. R. Sterrett, Des Moines Gas Co., Des Moines, Ia.
Conv., 1920.

Michigan Gas Association

Pres.—E. C. Campbell, Benton Harbor, Mich.
V.-Pres.—J. W. Batten, Detroit, Mich.
Sec.-Tr.—A. G. Schroeder, Grand Rapids Gas Light Co., Grand Rapids, Mich.
Conv., 1920.

New England Association of Gas Engineers

Pres.—W. F. Norton, Nashua,N. H.
V.-Pres.—V. E. Bird, New London, Ct.
Burton Smart, Portland. Me.
Sec.-Tr.—J. L. Tudbury, Salem, Mass.
Conv., 1920, Feb. 18-19—Boston, Mass.

New England Gas Sales Association

Gov.—William Gould, Boston, Mass.
Sec.—H. J. Pettengill, Jr., Woonsocket, R. I.
Treas.—W. T. Pease, Boston, Mass.

New Jersey State Gas Association

Pres.—C. W. Hoy, Glassboro, N. J.
V.-Pres.—R. H. Garrison.
Sec.-Tr.—Wm. P. Adams, Millville, N. J.
Conv., 1920.

Pacific Coast Gas Association

Pres.—A. B. Day, Los Angeles, Calif.
V.-Pres.—L. B. Jones, San Francisco, Calif.
Sec.-Tr.—Henry Bostwick, 445 Sutter St., San Francisco, Calif.
Conv., 1920.

Pennsylvania Gas Association

Pres.—G. F. Speaker, Lebanon, Pa.
V.-Pres.—O. H. Heckert,
J. L. Mather.
Sec.-Tr.—W. O. Lamson, Jr., West-Chester, Pa.
Conv., 1920, April 14-15—Philadelphia, Pa.

South Central Gas Association

(formerly Texas Gas Association)

Pres.—P. E. Nicholls, Galveston, Texas.
V.-Pres.—C. B. McKinney, Dallas, Texas.
F. L. Weisser, San Antonio, Texas.
Sec.-Tr.—C. H. Seidenglanz, 1501 Commerce St., Dallas, Texas.
Conv., 1920.

Southern Gas Association

Pres.—Noble Clay, Winston-Salem, N. C.
V.-Pres.—E. S. Dickey,
J. H. Haggerty.
Sec.-Tr.—M. A. Bowlin, Macon, Ga.
Conv., 1920, Norfolk, Va.

Wisconsin Gas Association

Pres.—Bruno Rahn, Milwaukee, Wis.
Sec.-Tr.—Henry Harman, 182 Wisconsin St., Milwaukee, Wis.
Conv., 1920, March 23-24, Milwaukee, Wis.

OTHER ASSOCIATIONS

Natural Gas Association of America

Pres.—Bert. C. Oliphant, Buffalo, N. Y
V.-Pres.—Harry J. Hoover,
Ogden K. Shannon,
H. A. Quay.
Sec.-Tr.—Wm. B. Way, 904-5 Oliver Bldg., Pittsburgh, Pa.
Conv., 1920, Atlantic City, N. J.

Society of Gas Lighting

Pres.—Alex. H. Strecker, Newark, N. J.
V.-Pres.—W. Cullen Morris.
Sec.—Geo. G. Ramsdell, 130 E. 15th St., New York, N. Y.
Treas.—Wm. J. Welsh.
Conv., 1920.

Southwestern Electrical and Gas Association

Pres.—Burr Martin, Dallas, Texas.
V.-Pres.—A. Hardgrave,
C. E. Corder,
A. H. Warren.
Sec.—H. S. Cooper, Slaughter Bldg., Dallas, Texas.
Treas.—J. B. Walker.
Conv., 1920. Hotel Galvez, Galveston, Texas, May 13-15.

QUESTION BOX

N reviving the "Question Box" the Association is guided by the desire to provide the most general dissemination of the information which is continually being furnished in answer to inquiries received at headquarters, as well as to give to those in search of information on specific subjects the benefit of the knowledge of our members located in different parts of the country. Members of the Association are asked to assist in securing the most complete information possible by submitting to the "Question Box" answers to such questions as come within their experience.

The questions and answers on Accounting subjects appearing in this issue have been contributed by the Committee on State Representatives, Mr. J. W. Heins, Chairman, who will be glad to receive inquiries from any of our members on their accounting problems.

The Industrial Fuel Sales Committee, Mr. H. H. Clark, Chairman, will handle questions relating to industrial fuel. In addition to the above the various committees of the several Sections and the general data files are available for answering inquiries on all phases of the industry and we hope our members will make liberal use of these sources of information. The names of companies or individuals submitting questions will not be published but credit will be given for answers received.

We also hope that our members will not fail to submit answers to any question on which they have information even though an answer to it has been published, as the Question Box is intended to provide a medium for the broadest possible exchange of information. Answers should refer to code number of question, A-1, G-1, etc.—*Editor.*

ACCOUNTING PROBLEMS

A-1 Will you kindly have member companies state how they handle prepayment meter records where they have a sliding scale.

In our small company we are full convinced that the small customers should pay more than the larger customers. At least the small customers using less than 1,000 cubic feet per month.

ANSWERS.

Mr. Burton Smart, State Representative, Maine

We do not set prepayment meters for customers using over 20,000 cubic feet of gas per month, which is the first step in our sliding scale, but if perchance they should use over 20,000 cubic feet we would refund to them by internal check the difference between what they had paid us at the going rate and the reduced rate obtained by using over 20,000 cubic feet in one month.

There is no question but that the small consumer using less than 1,000 cubic feet of gas per month should pay more than the consumer using 20,000 cubic feet or more per month but this brings up the question of a fixed monthly service charge covering the distribution expense to each customer, in our case $12.75 per year or slightly over $1.00 per month. If this charge could be made, and we believe it will be generally adopted in the near future by the gas commissions, we could sell gas at a much less rate and get at least our expense money back from each consumer. We understand this service charge has already been adopted in California, Wisconsin, New Jersey and New Hampshire, and that this matter will be discussed in full at the Annual Meeting of the New England Gas Association to be held February 18th and 19th in Boston.

Mr. C. S. Morse, State Representative, Virginia

The plan of having a sliding scale for prepayment consumers has been discussed, but the writer does not know any place where it has been adopted, and he would not recommend it.

Should you wish to try a plan of this kind, however, the writer would advise that you set all of your prepayments at your regular GROSS rate, and make refund quarterly or semi-annually to your large consumers who have earned a lower rate, according to your schedule. It would involve quite a little extra work on the part of your bookkeepers if you made these refunds monthly, especially if you have very many, and refunding quarterly or semi-annually would involve additional difficulty still because of the fact that the customer may have earned a different rate during each month of the quarter, according as the quantity of gas consumed by him varied.

Should the prepayments be set for the large consumer at a lower rate in the beginning than the small consumer is given, there may be times when he will enjoy a lower rate than the one to which he is entitled, because of decreased consumption, and it would engender more or less ill feeling on the part of the consumer to be called on by the Gas Company to make up the additional amount.

A better plan, it seems to the writer, would be as follows: To start with, all prepayments should be set at the GROSS rate, to compensate the company for the increased investment involved and increased distribution costs over the ordinary. For the small consumer using less than a thousand feet per month, there should be a minimum charge sufficiently large to cover the overhead, etc., in order that every customer, as far as possible, should be a profitable one. In this way, what the small consumer does not use in gas, he makes up in the minimum or service charge. Our experience in Portsmouth has been that we have had very little trouble whatsoever from large prepayment consumers wanting a lower rate on one hand, or small consumers refusing to pay the minimum on the other, and the accounts can be kept in much better shape when they are balanced out each month, as meters are read. If the consumption runs very large, the customer will usually want an ordinary meter in place of the prepayment.

Mr. W. J. Achelpohl, State Representative, Illinois

It is the practice of our companies to set all meters at the highest scale. When the meters are read and money removed from the same, the bills are figured at the rate the customer is entitled to and the excess amount deposited in the meter is refunded, or the consumer's account is given credit with the same.

A-2 I am writing to ask that you furnish us such information as you have relative to billing procedure where one consumer is being supplied through more than one meter. Do your records show that other companies combine the consumption of all meters for a consumer, apply the schedule and give the benefit of the reduced rate on a sliding scale, or is the schedule applied to the consumption shown by the individual meters? Where minimum charges are authorized, are they on a consumer per month or meter per month basis? Under what conditions is consumption combined?

ANSWERS.

Mr. E. Haase, State Representative, Wisconsin

Our company has two forms of gas bill. The one shows, on the face, space for the reading of two meters and a line for the combined consumption of the two, which is then extended at the rate applying to the total consumption, rates being indicated on the back of the bill. The other bill is provided where there are more than two meters supplying any one consumer in one building or in a group of adjacent buildings forming one establishment. On the reverse side of the bill is provided a space for the listing of ten meters, a total of the consumption of all of them and an application of the sliding scale to the combined consumption. We have a small minimum charge based on the meter per month basis and charges will be made on the meter per month basis unless the consumer is willing to have the duplicate meter removed.

Mr. Burton Smart, State Representative, Maine

We do not combine the consumption of all meters for one customer but deal with each meter separately; but in case a customer is using several meters, for his own benefit as well as ourselves we induce him to put in one meter through which all the gas used passes and if he wants to keep a record of the gas used in different departments, install silent meters or meters within the main meter.

Minimum charges are based on the consumption per meter per month basis but bills are rendered for minimum charges but once in six months.

In a large manufacturing plant using a large amount of gas in several industrial departments, we have combined the consumption of the several meters as though it had gone through one as it would be impracticable to pass all through one meter.

Mr. W. J. Achelpohl, State Representative, Illinois

If more than one meter is installed by the Company, the consumer should be given the benefit of the lowest rate for gas used on all meters. If separate meters are installed for the convenience of the customer, consumption shown on each meter should be figured at the scale rate assuming that each meter is a separate installation and serving one customer. Of course, local conditions would govern this.

A-3 I am desirous of securing information with reference to the advisability of carrying merchandise sales charges on gas ledgers, in other words, a combination ledger page for both gas and merchandise accounts; also information as to the advisability of transferring all delinquent balances from the gas ledgers to delinquent ledgers as compared with leaving all outstanding balances open in the gas ledgers until paid or charged off.

I would greatly appreciate an expression with regard to these two matters from the Accounting Section, or being put in touch with a few companies having approximately 75,000 accounts who are using the two systems mentioned above.

ANSWERS.

Mr. Burton Smart, State Representative, Maine

We have no doubt that a ledger could be made which would handle merchandise sales as well as gas sales in combination but we believe that it is desirable in every way to keep the two departments distinct or separate.

We transfer, after a six months' period all Delinquent Balances from gas ledgers to Delinquent Ledgers and all Delinquent Merchandise Balances to Delinquent Merchandise Ledgers and have both original and Delinquent Ledgers in both gas and merchandise sales so arranged that before a bill goes out, all indebtedness is placed thereon once a month and this works very much better than handling the two sets of bills separately.

Mr. C. S. Morse, State Representative, Virginia

Would say that there are no gas companies in Virginia handling 75,000 accounts.

So far as it affects the small companies, the writer does not believe that it is a satisfactory plan, because the gas consumption is divided between prepayment and ordinary meters, and in the case of owners with prepayment meters, no monthly bills are sent. Furthermore, it appears to be a better plan to have separate bookkeepers to handle the gas accounts from the appliances, tar, coke, etc., as the bookkeeper handling the latter becomes more familiar with the proper prices to charge than the bookkeeper for gas accounts, and, in turn, the gas bookkeeper would be much more likely to catch a slow meter than the appliance bookkeeper. The appliance bookkeeper also keeps behind the payments on the accounts much better when they are segregated than would be possible if he had to look through the entire list of consumers to pick out the 20% or 25% of them that owed bills on appliances.

Mr. W. J. Achelpohl, State Representative, Illinois

Do not think it advisable for a Company with 75,000 accounts, to use combination ledger for both gas and merchandise accounts. A company with this number of con-

sumers should have the City divided into districts, reading meters at different periods during the month and would find that it would take a great deal of labor to assemble the various charges and combine them.

GENERAL PROBLEMS

(NOTE: Information furnished from Association data files and various Committees on inquiries received recently at headquarters.—*Editor*).

G-1 From the results of twelve months operation of a Carburetted Water Gas Machine of the Lowe type it is shown that there was used in making gas 37-6 lbs. of Anthracite coal and 3.1 Imperial gallons of gas oil of 34° to 36° Baumé. The calorific value as per inspector's reports gives an average of 651 B. t. u. What would be the probable effect on coal consumption in generator per thousand feet of gas made if the amount of oil used should be reduced to equal, say 2 gallons per M?

ANSWERS.

Mr. R. G. Griswold, Chemical Committee

Regarding the influence of reduction in the amount of oil on the amount of coal per thousand, we have no direct data on this point, but believe that some of the Companies manufacturing water gas have had some such experience during the war.

We should imagine that the reduction in oil you specify would increase the solid fuel about 20%.

Mr. L. J. Willien, Chemical Committee

Assuming that one United States gallon of oil produces 65 cubic feet of oil gas, the composition of the finished gas in which 3.1 Imperial gallons of gas oil is used per M would be as follows:

25% oil gas and 75% blue gas. If in making the above gas 37 to 36 lbs. of anthracite coal is used, it would mean that 48 lbs. would be used per thousand feet of blue gas. Using 2 gallons of oil per M the composition of the gas would probably be as follows:

15% oil gas and 85% blue gas. According to my calculations, it would require about 41 lbs. of fuel per M to make the gas with the reduced amount of oil. In other words, the probable effect on the coal consumption would amount to between 4 and 5 lbs. additional fuel per thousand feet of gas.

Dr. J. F. Wing, Chemical Committee

In the operation described in the question, carburetting the water gas was done apparently with great efficiency. If the oil is reduced from 3.1 imperial gallons to 2 imperial gallons per thousand, is of the same quality, and the operation of the machine is carried out with the same efficiency, it is probable that the generator coal would be increased 12 to 15%, say from 37.6 pounds to 43 pounds.

The fuel for steam generation would be increased in about the same proportion.

G-2 I would like to be advised as to a good method for the determination of ammonium chloride in coke oven gas, results to be expressed in grams per 100 cubic feet.

ANSWER.

Mr. F. W. Sperr, Jr., Chemical Committee

In order to give a specific method, it would be necessary to know from what point in the system the gas sample is taken. The procedure would depend upon whether the gas contains tarry matter. In any event, a little consideration will show that the gas sample will have to be taken in such a way as to obtain a solution of ammonium chloride in water together with other ammonia compounds and possibly free H_2S.

In order to determine the ammonium chloride in this solution, it is sufficient simply to determine the chlorine and the same method may be followed as in the determination of chlorine in weak ammonia liquor. A good method is described in the Gas Chemists' Handbook, but precaution should be taken to run a blank on the reagents used. We have had a great deal of trouble with different lots of hydrogen peroxide. Having determined the chlorine, the equivalent ammonium chloride may readily be calculated.

G-3 I am under the impression that a number of cities have a city inspector, who passes on each installation of gas piping before gas is allowed to be turned on. If you can give me a list of these cities, and any other information you have as to their requirements, I shall greatly appreciate it.

ANSWERS.

Association Headquarters

In New York City an inspector of the Building Department passes on all piping and fittings in new buildings or where alterations are being made. Meters are not set until a certificate is received from the City Building Department.

Mr. H. B. Andersen United Gas Improvement Co., Philadelphia, Pa.

Concerning the method of inspection of house piping in Philadelphia, I would say that responsibility for this inspection, according to the terms of the lease between the City and the United Gas Improvement Company, rests entirely on the Company and is conducted in accordance with the booklet entitled "Specifications for Fuel and Illuminating Piping and Fixtures." The City authorities have no connection either direct or indirect with the matter of this inspection.

I believe that Mr. C. E. Reinicker, when he was Chairman of the Committee on Gas House Piping, of the American Gas Institute, several years ago, sent a questionnaire to practically all the large cities in the United States and received answers on this particular point.

Mr. C. L. Day, Peoples Gas Light & Coke Co., Chicago, Ill.

The Peoples Gas Light and Coke Company of Chicago does its own inspecting of new piping in buildings.

Mr. Jacob D. Von Maur, Laclede Gas Light Co., St. Louis, Mo.

There is no City inspection of gas housepiping in St. Louis. Our rules have been made in conference with the Master Plumbers, and these rules are printed in the Building Code. The Gas Company takes care of all of the inspection work.

I know of no cities where the City takes charge of this inspection.

G-4 We are confronted with a legal controversy in the matter of erecting district holders. Can you cite for our attorney court decisions in recent cases?

ANSWER.

Association Headquarters

We would cite the following references:

New York vs. Flatbush Gas Co.—1909 where action against Company was dismissed by Judge Mattox in the Supreme Court, carried to the Appellate Court, where judgment of lower court was affirmed. (Vol. 3, New York Supplement 1113.)

A. G. I. NEWS, January 1913, page 680 refers to favorable decision of Appellate Court as to right of Peoples Gas Light & Coke Co. of Chicago to erect storage holder.

In City of Cleveland vs. Gas Light Co., No. 20, New Jersey e. q. 201, Court held gas holder in itself was not a nuisance.

Circuit Court on August 25, 1908 at Clarksburg, W. Va., decided that Standard Oil gas tanks were not a nuisance.

G-5 We are desirous of getting in touch with a manufacturer of a system for the central heating of small cottages which does not involve the use of coal.

If you have any system in which oil can be used in place of coal for the furnace, we should like to have prices, net and gross weights, and any information you can give us with regard to same.

ANSWER.

A. G. A. Manufacturers Section Service

The heating plant of the Singer Building, New York City, was converted from coal to fuel oil by the Gilbert Barker Company, Springfield, Mass., from whom you may be able to secure more definite information on the subject.

Experiments are now being made on the Pacific Coast for house heating by the application of oil but no definite figures have as yet been given out. The Johnson Burner which is extensively used in that section of the country is represented in New York by the American Pressed Radiator Company of 101 Park Avenue, New York City. You might also correspond with them on this subject.

G-6 Kindly send us names and addresses of concerns who are manufacturing gas wooden table lamps and gas piano floor lamps.

ANSWER.

A. G. A. Manufacturers Section Service

The following firm manufactures gas wooden lamps:

Wm. R. Noe & Sons,
53 West 21st Street,
New York, N. Y.

G-7 We are compiling some statistics and are anxious to have your opinion of the normal sales of gas ranges per year in towns of 5,000, 10,000, 20,000 and 50,000 population.

ANSWER.

A. G. A. Manufacturers Section Service

The data herewith was obtained from public utility companies operating in towns with the following consumers:

5,000	consumers—normal		sale	500	gas	ranges
10,000	"	"	"	800	"	"
20,000	"	"	"	1,200	"	"
50,000	"	"	"	2,500	"	"

G-8 I have a prospect for a large galvanizing outfit and I would appreciate your sending me any information that you can on this particular work.

The outfit would have to be large enough to dip wash tubs and basins in.

ANSWER.

Association Headquarters, W. A. Ehlers

As far as we have been able to ascertain there is no standard appliance on the market for galvanizing.

On account of the fact that this operation stands between what might be considered low temperature work and the so-called high temperature operation very little attention has been paid to the subject, and also as a general rule such operations are of a nature to preclude a standard type of appliance.

In practically every case it is a matter of having built a suitable steel tank or container that will handle the work in question and then applying the fuel in the most practical and economical way.

I note that the outfit would have to be large enough to dip wash tubs and basins in bu: you have not given the maximum dimensions of the largest vessel or the produc-

tion which your prospect desires to turn out. It is, therefore, somewhat difficult for us to give you any concrete information.

From my experience I will be inclined to recommend the use of the Surface Combustion equipment applied to a furnace designed to meet the particular requirements of your customer.

I am enclosing herewith a pamphlet by the Surface Combustion Company on "Gas for Heating Galvanizing Baths" which is a reprint from the American Gas Engineering *Journal* of April 7, 1919. On page 4, you will note the construction of a galvanizing bath, but this of course would not fulfill the requirements of your customer.

The Peoples Gas Light and Coke Company of Chicago has obtained considerable business in connection with the use of gas for galvanizing and has been successful in converting to gas the following plants:

Standard Galvanizing Company
National Galvanizing Company
Heaney Galvanizing Company
Joslyn Manufacturing Co.
Crane Company

From our experience in the use of gas for this purpose, I would suggest that you figure on approximately 65 cu. ft. of gas per 100 lbs. of metal galvanizing. This will enable you to approximate roughly the gas requirements of your customer.

G-9 We have a consumer that is desirous of having us supply them with gas for melting tungsten steel.

They are at present melting steel in pit furnaces, using Dixon Graphite Crucibles. Heat being supplied by Dixon Gas Producer Plant, using gas coal with steam, steel is melted at approximately 3,200° F.

Do you know of any concern which is melting steel in pit furnaces, using carburetted water gas as fuel with a heat value of 585 B. t. u. per cu. ft.

ANSWER.

Association Headquarters, W. A. Ehlers.

In regard to melting High Speed Steel some results have been obtained by the use of a double chamber melting furnace, using a No. 2 Maxon Premix Burner and a No. 60 Black Lead Crucible. From a number of tests under observation, it was found that after 3½ hours of firing, the temperature was high enough to fuse the steel; the cover was then removed and a flux was placed in the crucible. After that it required from 1 to 1½ hours to bring the steel to a pouring temperature of about 2,900° F. The total time for a heat of two No. 60 crucibles, holding 100 lbs. of steel each, was about 5 hrs. We have found that heats have been spoiled in the oil furnaces on account of taking a great deal longer to bring down the metal.

Carborundum brick should be used as the inside lining of the furnace with a good grade of silica brick as the supporting or main furnace bricks. Outside of the fire brick there should be a space of at least 4 inches between it and the furnace lining, filled with sand. Covers should also be made of carborundum brick.

The crucible life is very short, in some cases only 1 heat, in others 9 heats with an average of about 3 to 4 heats per crucible.

If your customer is a small user, you can no doubt do his work satisfactorily, but if it is a large concern looking for quantity production, I would not encourage the use of gas for this purpose.

Electric appliances for the purpose of melting steel can be obtained as low as one ton capacity, the results have been fairly good so that the competition with gas at the existing rates makes gas almost impossible.

The following are the results of two tests which of course represent pretty careful operation and I doubt very much if you would be able to reproduce them in an average day's operation, unless great care was exercised.

TEST NO. 1

Amount of steel melted using 2 No. 60 black lead crucibles	200 lbs.
Length of time required to melt	4¾ hours
Gas consumption per melt	2,900 cu. ft.
Average hourly rate	1,450 " "

TEST NO. 2

Amount of steel melted using 2 No. 60 black lead crucibles	200 lbs.
Length of time required to melt	4⅓ hours
Gas consumption per melt	6,500 cu. ft.
Average hourly rate	1,500 " "

G-10 sales of gas appliances or new customers connected, by a Commercial Depart- Will you kindly send us what you consider to be the best form for reporting ment, if you have such samples on hand.

ANSWER.

Association Headquarters

Sample forms for reporting sales of gas appliances or new customers connected as used by the following companies are available at Association headquarters:

Gas & Electric Improvement Co., Boston, Mass.
Laclede Gas Light Co., St. Louis, Mo.
Public Service Gas Co., Newark, N. J.

Members are requested to forward copies of the forms used by their company so that our files on this question may be complete.

G-11 I am endeavoring to induce the supply officer at Fort Crockett to install gas in all quarters and mess kitchens at Fort Crockett and will appreciate any information regarding the use of gas in army posts that you may have available.

(NOTE: Members in answering the above question will please note that information should cover regular *army posts* and not cantonments organized in connection with the war.

(Continued from Acct'g Section, page 164.)

The last mentioned information should be a vital factor in determining just what efficient work a man is doing. It cannot be denied that the man who secures the best results on the least number of calls, is making the best showing and is really producing. It also has a tendency to have the men clean up small accounts or balances. Taking all three points into consideration it should not be hard to determine the value of any collector. To stimulate competition the men are individually shown their records for the month, and comparison made of results obtained by their fellows.

FORMS: The keeping of proper records for recording payments and a correct condition of the accounts is governed by the fact that such records must be in accordance with proper accounting methods. However, there seems to be some difference of opinion in reference to the actual collection record from which the collector makes his call, and on which he records the result of his visit. Two methods have been used in Philadelphia. One, for gas, a card about 3½ inches by 8 inches, the other, for merchandise, slips of about the same size kept in binders in geographical order, there being a binder for each section (see description above for sections) and all of the accounts for the section in one binder.

With the latter form a collector must handle every account, but does not call on those not due. Likewise, the clerks in going over the reports handle all ac-

counts whether a call was made or not. The one particular advantage is that all accounts for a consumer are brought together no matter when or where the purchases were made. With a little care this can also be done with the collection cards.

To sum up the problem of collecting it resolves itself into the simple application of common sense methods, and the ability to place ourselves in the position of the other fellow—how we would like to be approached if we owe an account, and what appeal we would respond to if we were in the other fellow's place.

Mr. Charles L. Holman

Our past Vice-President and one of our present Directors, Mr. Charles L. Holman, has become identified with a new subsidiary of the Guarantee Trust Company and will henceforth make his business headquarters in New York.

Mr. Holman has been President of The Laclede Gas Light Company, of St. Louis, since 1912 and will continue in that capacity, directing the company's affairs from his New York office. Mr. Holman has been an earnest supporter of the American Gas Association since its organization and will now be even better able to participate actively in its work.

Annual Meeting of Pennsylvania Gas Association

Philadelphia, April 13-17, 1920 **Headquarters: Hotel Adelphia**

Tuesday Evening, April 13th, 8 P. M.
Annual Meeting of Council of Association.

Wednesday Morning, April 14th, 10 A. M.—Opening Session.
Report of Council on the management of the Association during year 1919-20.
Reports of Committees.
President's Address.

Wednesday Afternoon, April 14th, 2 P. M.
Report of Nominating Committee.
Election of Officers for 1920-21.
Address: Publicity and advertising plans of the American Gas Association.
Paper: "Financing Installment Sales, Use of Trade Acceptances," G. E. Messmore, Jenkintown, Pa.
Paper: "The Separation of Selling Costs from Operating Costs," Wm. G. Sterrett, Chester, Pa.

Thursday Morning, April 15th, 10 A. M.
Paper: "Latest Developments in Industrial Fuel," Mr. Otto Lellep, New York.
Paper: "Main Laying"—describing recent main extension from the Rainey-Wood Coke Company to Norristown and other districts supplied by the Counties Gas & Electric Company. H. B. Bryans, Norristown, Pa.
Paper: "Disposal of Waste from Gas Plants."

Thursday Afternoon, April 15th, 2 P. M.
Members will meet at 2 P. M. sharp and will be driven to the plant of the Rainey-Wood Coke Company, Swedeland, Pa.

Friday Morning, April 16th, 10 A. M.
Paper: "Factors for Consideration in Rate Making," Discussion to be opened by H. E. Ehlers, Public Service Commission.
Paper: "Rates," Robert G. Griswold, of Henry L. Doherty & Company.
Paper: "The Unsold Market for Gas," C. E. Bartlett, Philadelphia.

Classified Directory--Manufacturers of Gas Equipment

Company Members Only, American Gas Association, Inc.

ARC LAMPS (Gas)

General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Welsbach Co., Gloucester, N. J.

BENCHES

J. H. Gautier & Co., Jersey City, N. J.
Russell Engineering Co., St. Louis, Mo.
The Gas Machinery Co., Inc., Cleveland, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

BENCH IRON WORK

Davis & Farnum Mfg. Co., Waltham, Mass.
Isbell-Porter Co., Newark, N. J.
Russell Engineering Co., St. Louis, Mo.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Stacey Mfg. Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

BOILERS (Gas)

Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Wm. Kane Mfg. Co., Inc., 1915 Adams St., Philadelphia, Pa.
Kidde & Co., 169 Chambers St., New York, N. Y.
F. W. Ofeldt & Sons, Nyack, N. Y.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

BOILERS (Gas for House Heating)

Dodd Heating Systems Limited, Toronto, Ont.
Kidde & Co., 169 Chambers St., New York, N. Y.
The Bryant Heater & Mfg. Co., Cleveland, Ohio

BOILERS (Waste Heat)

The Bartlett Hayward Co., Baltimore, Md.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

BLOWERS, BOOSTERS, EXHAUSTERS

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Isbell-Porter Co., Newark, N. J.
Maxon-Premix Burner Co., Muncie, Ind.
The Gas Machinery Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.
Wilbraham-Green Blower Co., Pottstown, Pa.
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

BRAZING TABLES

Rathbone, Sard & Co., Albany, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

BROILERS (Hotel)

Geo. M. Clark & Co., Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Rathbone, Sard & Co., Albany, N. Y.
The Michigan Stove Co., Detroit, Mich.

BURNERS (Industrial)

Century Stove & Mfg. Co., Johnstown, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
General Fire Extinguisher Co., Providence, R. I.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Charles A. Hones, Inc., 91 Noble St., Brooklyn, N. Y.
International Hale Gas Mixer Co., Providence, R. I.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Maxon-Premix Burner Co., Muncie, Ind.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Eclipse Stove Co., Mansfield, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.

BURNERS (Lighting)

American Meter Co., Inc., 105 W. 40th St., New York, N. Y.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Welsbach Co., Gloucester, N. J.

BY-PRODUCT OVENS

By-Product Coke Corp., Chicago, Ill.
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
Semet-Solvay Co., Syracuse, N. Y.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Koppers Co., Pittsburgh, Pa.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.

BY-PRODUCT RECOVERY APPARATUS

Foundation Oven Corporation, Woolworth Building, New York, N. Y.
Isbell-Porter Co., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Koppers Co., Pittsburgh, Pa.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

CALORIMETERS

American Meter Co., Inc., 105 W. 40th St., New York, N. Y.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.
Superior Meter Co., Brooklyn, N. Y.

CASING, TUBING (Steel)

National Tube Co., Frick Bldg., Pittsburgh, Pa.

CHARGING COAL

Isbell-Porter Co., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

COAL AND COKE (Conveyors, Crushers, Screeners)
R. H. Beaumont Co., 315 Arch St., Philadelphia, Pa.
Isbell-Porter Co., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

COAL TAR PRODUCTS & CHEMICALS
The Barrett Company, 17 Battery Place, New York, N. Y.

COCKS (Ranges, Water Heaters, Service and Meter)
A-B Stove Co., Battle Creek, Mich.
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Hays Mfg. Co., Inc., Erie, Pa.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Kitson Co., 2837 Oakford St., Philadelphia, Pa.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Standard Brass Works, Detroit, Mich.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Roberts Brass Mfg. Co., Detroit, Mich.

COMPRESSORS
Plant Engineering & Equipment Co., 192 Broadway, New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

CONDENSERS
Camden Iron Works, Camden, N. J.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Isbell-Porter Co., Newark, N. J.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Stacey Mfg. Co., Cincinnati, Ohio
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

COOKING AUXILIARIES
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Duparquet, Huot & Moneuse Co., 108 W. 22nd St., New York, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
The G. S. Blodgett Co., Burlington, Vt.
The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Scott Gas Appliance Co., 1311 E. St., N. W., Washington, D. C.

COUPLINGS
S. R. Dresser Mfg. Co., Bradford, Pa.

CYLINDERS (Pressure)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

DECALCOMANIA PRODUCTS
The Meyercord Co., Inc., Chamber of Commerce Bldg., Chicago, Ill.

DYES, DISINFECTANTS, DRY COLORS
The Sherwin-Williams Co., Cleveland, Ohio, New York, N. Y.

ELECTRIC CONTROLLING DEVICES
The Cutler-Hammer Mfg. Co., Milwaukee, Wis.

EXCHANGERS (Heat)
The Bartlett Hayward Co., Baltimore, Md.
The Western Gas Construction Co., Fort Wayne, Ind.

EXPERT APPRAISAL
Steere Engineering Co., Detroit, Mich.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

EXTRACTORS (Tar, Dust, Fumes)
Isbell-Porter Co., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

FITTINGS
A-B Stove Co., Battle Creek, Mich.
Will W. Barnes, 31 Chelsea Place, East Orange, N. J.
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Davis & Farnum Mfg. Co., Waltham, Mass.
S. R. Dresser Mfg. Co., Bradford, Pa.
Eriez Stove & Mfg. Co., Erie, Pa.
General Fire Extinguisher Co., Providence, R. I.
Kitson Co., 2827 Oakford St., Philadelphia, Pa.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Shapiro & Aronson, Inc., 20 Warren St., New York, N. Y.
Standard Brass Works, Detroit, Mich.
The Gas Machinery Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Roberts Brass Mfg. Co., Detroit, Mich.
The Western Gas Construction Co., Fort Wayne, Ind.
Welsbach Co., Gloucester, N. J.

FITTINGS (Malleable Iron)
Stanley G. Flagg & Co., 1421 Chestnut St., Philadelphia, Pa.

FLEXIBLE TUBING
Atlantic Tubing Co., Providence, R. I.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Titeflex Metal Hose Corp., Badger Ave., Newark, N. J.

FLASHLIGHTS AND BATTERIES
Will W. Barnes, 31 Chelsea Place, East Orange, N. J.

FUEL BRIQUETTING
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
General Briquetting Co., 25 Broad St., New York, N. Y.

FURNACES
Century Stove & Mfg. Co., Johnstown, Pa.
Eriez Stove & Mfg. Co., Erie, Pa.
Geist Mfg. Co., Atlantic City, N. J.
Charles A. Hones, Inc., 91 Noble St., Brooklyn, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Maxon-Premix Burner Co., Muncie, Ind.
Russell Engineering Co., St. Louis, Mo.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

GAS ENGINES
The Bartlett Hayward Co., Baltimore, Md.

GAS ENGINE COCKS AND VALVES
Standard Brass Works, Detroit, Mich.

GAS IRONS
A-B Stove Co., Battle Creek, Mich.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Milwaukee Gas Specialty Co., Milwaukee, Wis.
Perfect Combustion Co., Chicago, Ill.
Strause Gas Iron Co., Philadelphia, Pa.

GAS LOGS

Backus Heater & Foundry Co., Inc., Boston, Mass.
The Mead Gas Heater Co., Delawanna, N. J.
Strait & Richards, Inc., Newark, N. J.

GAS MIXERS

Century Stove & Mfg. Co., Johnstown, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eriez Stove & Mfg. Co., Erie, Pa.
Geist Mfg. Co., Atlantic City, N. J.
General Fire Extinguisher Co., Providence, R. I.
Hays Mfg. Co., Inc., Erie, Pa.
Improved Appliance Co., Inc., 419 Kent Ave., Brooklyn, N. Y.
International Hale Gas Mixer Co., Providence, R. I.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Maxon-Premix Burner Co., Muncie, Ind.
Strait & Richards, Inc., Newark, N. J.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

GAS PLANTS (Blue)

The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

GAS PLANTS (Carbureted Water)

Gas Machinery Co., Cleveland, Ohio
The Bartlett Hayward Co., Baltimore, Md.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Stacey Mfg. Co., Cincinnati, Ohio
The U. G. I Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

GAS PLANTS (Coal) (Engineers)

Camden Iron Works, Camden, N. J.
Davis & Farnum Mfg. Co., Waltham, Mass.
Isbell-Porter Co., Newark, N. J.
Russell Engineering Co., St. Louis, Mo.
Semet-Solvay Co., Syracuse, N. Y.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Stacey Mfg. Co., Cincinnati, Ohio
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

GAS RANGE WATER HEATERS

Elliott Water Heater Co., Inc., 1246 Myrtle Ave., Brooklyn, N. Y.

HEATERS (Room)

Backus Heater & Foundry Co., Inc., Boston, Mass.
Century Stove & Mfg. Co., Johnstown, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.
Eriez Stove & Mfg. Co., Erie, Pa.
Estate Stove Co., Hamilton, Ohio
Geist Mfg. Co., Atlantic City, N. J.
General Fire Extinguisher Co., Providence, R. I.
General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
Illinois Specialty Mfg. Co., Bloomington, Ill.
Kidde & Co., 169 Chambers St., New York, N. Y.
Lawson Mfg. Co., Pittsburgh, Pa.
New Process Stove Co. Div., Cleveland, Ohio
Reliable Stove Co. Div., Cleveland, Ohio
Reznor Mfg. Co., Mercer, Pa.
Roberts & Mander Stove Co., Philadelphia, Pa.
J. B. Slattery & Bro. Inc., 108-110 Lawrence St., Brooklyn, N. Y.
Strait & Richards, Inc., Newark, N. J.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Champion Stove Co., Cleveland, Ohio
The Mead Gas Heater Co., Delawanna, N. J.
The Ohio State Stove & Mfg. Co., Columbus, Ohio.
The Sanitary Heating Co., 233 37th St., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

HEATERS (Garage)

Kidde & Co., 169 Chambers St., New York, N. Y.

HEATERS (Pressing and Soldering Irons)

Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
Estate Stove Co., Hamilton, Ohio
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Charles A. Hones, Inc., 91 Noble St., Brooklyn, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Strait & Richards, Inc., Newark, N. J.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

HIGH PRESSURE SYSTEMS

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
General Fire Extinguisher Co., Providence, R. I.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Selas Co., 521 W. 23d St., New York, N. Y.
The Gas Machinery Co., Cleveland, Ohio
The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

HOLDERS (Structural Steel Works))

Camden Iron Works, Camden, N. J.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
The Bartlett Hayward Co., Baltimore, Md.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Mfg. Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

HOT PLATES

A-B Stove Co., Battle Creek, Mich.
Century Stove & Mfg. Co., Johnstown, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.
Eriez Stove & Mfg. Co., Erie, Pa.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Rathbone, Sard & Co., Albany, N. Y.
J. B. Slattery & Bro., Inc., 108-110 Lawrence St., Brooklyn, N. Y.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Champion Stove Co., Cleveland, Ohio
The Eclipse Stove Co., Mansfield, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Michigan Stove Co., Detroit, Mich.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.
The Ohio State Stove & Mfg. Co., Columbus, Ohio
Union Stove Works, 20 Beekman St., New York, N. Y.
Weir Stove Co., Taunton, Mass.

INCINERATORS
Estate Stove Co., Hamilton, Ohio
Ruud Mfg. Co., Pittsburgh, Pa.

INSTRUMENTS (Measuring, Testing and Recording)
American Meter Co., 105 W. 40th St., New York, N. Y.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, Ohio
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Precision Instrument Co., 21 Halsey St., Newark, N. J.
Republic Flow Meters Co., 565 Washington Blvd., Chicago, Ill.
Steere Engineering Co., Detroit, Mich.
The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

INSULATING MATERIALS
Celite Products Co., 11 Broadway, New York, N. Y.
Davis & Farnum Mfg. Co., Waltham, Mass.

KILNS (For Firing Glass, China and Pottery)
B. F. Drakenfeld & Co., Inc., 50 Murray St., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Russell Engineering Co., St. Louis, Mo.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

LIGHTERS (Ranges)
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Milwaukee Gas Specialty Co., Milwaukee, Wis.
Safety Gas Lighter Co., Haverhill, Mass.
Strause Gas Iron Co., Philadelphia, Pa.
The Michigan Stove Co., Detroit, Mich.
Welsbach Co., Gloucester, N. J.

LIGHTING (Fixtures)
Will W. Barnes, 31 Chelsea Place, East Orange, N. J.
Shapiro & Aronson, Inc., 20 Warren St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

LIGHTING (Gas Domes, Portables, etc.)
Will W. Barnes, 31 Chelsea Place, East Orange, N. J.
Kramer Bros. Lamp Co., 585 Broadway, New York, N. Y.
Shapiro & Aronson, Inc., 20 Warren St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

LIGHTING (Glassware)
Shapiro & Aronson, Inc., 20 Warren St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

LIGHTING (Incidentals)
Storrs Mica Co., Owego, N. Y.

LIGHTING (Mantles)
General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
Welsbach Co., Gloucester, N. J.

METAL RECEPTACLES
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Charles A. Hones, Inc., 91 Noble St., Brooklyn, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
United Lead Co., 111 Broadway, New York, N. Y.

METERS
American Meter Co., 105 W. 40th St., New York, N. Y.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, Ohio
Cleveland Gas Meter Co., Cleveland, Ohio
Equitable Meter Co., Pittsburgh, Pa.
John J. Griffin & Co., 1521 Race St., Philadelphia, Pa.
Helme & McIlhenny, 1349 Cherry St., Philadelphia, Pa.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Metric Metal Works, Erie, Pa.
Precision Instrument Co., 21 Halsey St., Newark, N. J.
Rotary Meter Co., 52 Vanderbilt Ave., New York, N. Y.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Cleveland Rotary Meter Co., Cleveland, Ohio
The Cutler-Hammer Mfg. Co., Milwaukee, Wis.
The Sprague Meter Co., Bridgeport, Conn.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.

METERS (Air and Steam)
Republic Flow Meters Co., 565 Washington Blvd., Chicago, Ill.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

METER CONNECTIONS, SEALS, Etc.
American Meter Co., 105 W. 40th St., New York, N. Y.
Cleveland Gas Meter Co., Cleveland, Ohio
S. R. Dresser Mfg. Co., Bradford, Pa.
Equitable Meter Co., Pittsburgh, Pa.
Helme & McIlhenny, 1349 Cherry St., Philadelphia, Pa.
D. McDonald & Co., Albany, N. Y.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Lattimer Stevens Co., Columbus, Ohio
The Sprague Meter Co., Bridgeport, Conn.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.

METER PROVERS
American Meter Co., 105 W. 40th St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
John J. Griffin & Co., Philadelphia, Pa.
Helme & McIlhenny, 1349 Cherry St., Philadelphia, Pa.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.

METER SHELF
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.

OFFICE LABOR SAVING DEVICES
Addressograph Co., Chicago, Ill.
Burroughs Adding Machine Co., Detroit Mich.
Elliott-Fisher Co., Harrisburg, Pa.
Kalamazoo Loose-Leaf Binder Co., Kalamazoo, Mich.
Library Bureau, Boston, Mass.
Monroe Calculating Machine Co., Woolworth Bldg., New York, N. Y.
The Rand Co., North Tonawanda, N. Y.
Underwood Typewriter Co., Vesey St., New York, N. Y.

OIL (Diaphragm)
John J. Griffin & Co., 1521 Race St., Philadelphia, Pa.
Superior Meter Co., Brooklyn, N. Y.

OVENS (Baking and Cooking)
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
Famous Oven Manufacturing Co., 110 W. 42nd S., New York, N. Y.
General Fire Extinguisher Co., Providence, R. I.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
The G. S. Blodgett Co., Burlington, Vt.
The Crandall-Pettee Co., Hudson St., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Ohio State Stove & Mfg. Co., Columbus, Ohio
The Union Steel Products Co., Ltd., Albion, Mich.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

OVENS (Annealing, Japanning, Drying, Core, etc.)
Famous Oven Manufacturing Co., 110 W. 42nd St., New York, N. Y.
Gehnrich Indirect Heat Oven Co., Inc., 62 Franklin Ave., Brooklyn, N. Y.
General Fire Extinguisher Co., Providence, R. I.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., New York, N. Y.
The Union Steel Products Co., Ltd., Albion, Mich.
Young Bros. Co., Detroit, Mich.

OVENS (Warming)
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
The G. S. Blodgett Co., Burlington, Vt.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Union Steel Products Co., Ltd., Albion, Mich.

PAINTS AND VARNISHES
The Sherwin-Williams Co., Cleveland, Ohio, New York, N. Y.

PHOTOMETERS
American Meter Co., 105 W. 40th St., New York, N. Y.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Nathaniel Tufts Meter Works, Boston, Mass.

PIPE
Camden Iron Works, Camden, N. J.
Davis & Farnum Mfg. Co., Waltham, Mass.
General Fire Extinguisher Co., Providence, R. I.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
United Lead Co., 111 Broadway, New York, N. Y.

PIPE CASTINGS AND SPECIALS
Davis & Farnum Mfg. Co., Waltham, Mass.
Isbell-Porter Co., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The Stacey Mfg. Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

PIPE CLAMPS AND SLEEVES
Davis & Farnum Mfg. Co., Waltham, Mass.
S. R. Dresser Mfg. Co., Bradford, Pa.

PIPE PACKING
Celite Products Co., 11 Broadway, New York, N. Y.
General Fire Extinguisher Co., Providence, R. I.
United Lead Co., 111 Broadway, New York, N. Y.

PIPE TOOLS (Caulking, Cutting, Tapping)
General Fire Extinguisher Co., Providence, R. I.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
United Lead Co., 111 Broadway, New York, N. Y.

PLATE WARMERS
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Duparquet, Huot & Moneuse Co., 108 W. 22nd St., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

PORCELAIN ENAMEL PARTS (Stoves, Lamps, Linings, Stamping and Spinnings)
Baltimore Enamel & Novelty Co., Baltimore, Md.
Eclipse Gas Stove Co., Rockford, Ill.
The Enamel Products Co., Cleveland, Ohio
The Porcelain Enamel & Mfg. Co., Baltimore, Md.
The Union Steel Products Co., Ltd., Albion, Mich.

PRESSURE GAUGES
American Meter Co., 105 W. 40th St., New York, N. Y.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
General Fire Extinguisher Co., Providence, R. I.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Cleveland Rotary Meter Co., Cleveland, Ohio
The Gas Machinery Co., Cleveland, Ohio
The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.
Nathaniel Tufts Meter Works, Boston, Mass.

PUMPS
American Meter Co., 105 W. 40th St., New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
Nathaniel Tufts Meter Works, Boston, Mass.
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.
Superior Meter Co., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

PURIFIERS
Camden Iron Works, Camden, N. J.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Machinery Co., Cleveland, Ohio
Isbell-Porter Co., Newark, N. J.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Mfg. Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

PURIFYING MATERIALS
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Gas Purifying Materials Co., Long Island City, N. Y.
J. F. Henderson Co., 1707 Commonwealth Bldg., Pittsburgh, Pa.

RADIATORS
James B. Clow & Sons, Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eriez Stove & Mfg. Co., Erie, Pa.
General Fire Extinguisher Co., Providence, R. I.
Kidde & Co., 169 Chambers St., New York, N. Y.
J. B. Slattery & Bro., Inc., 108-110 Lawrence St., Brooklyn, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Mead Gas Heater Co., Delawanna, N. J.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.

RANGES (Domestic)
A-B Stove Co., Battle Creek, Mich.
Century Stove & Mfg. Co., Johnstown, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Chambers Manufacturing Co., Shelbyville, Ind.—(Fireless type)
Bartlett & Co., Inc., Philadelphia, Pa.
Comstock-Castle Stove Co., Quincy, Ill.
Abram Cox Stove Co., Philadelphia, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Dangler Stove Co. Div., Cleveland, Ohio
Eclipse Gas Stove Co., Rockford, Ill.
Eriez Stove & Mfg. Co., Erie, Pa.
Estate Stove Co., Hamilton, Ohio
National Stove Co. Div., Lorain, Ohio
New Process Stove Co. Div., Cleveland, Ohio
Quick Meal Stove Co. Div., St. Louis, Mo.
Rathbone, Sard & Co., Albany, N. Y.
Reliable Stove Co. Div., Cleveland, Ohio
Roberts & Mander Stove Co., Philadelphia, Pa.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Champion Stove Co., Cleveland, Ohio
The Eclipse Stove Co., Mansfield, Ohio
The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
The Michigan Stove Co., Detroit, Mich.
The Ohio State Stove & Mfg. Co., Columbus, Ohio
The Peninsular Stove Co., Detroit, Mich.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.
Union Stove Works, 70 Beekman St., New York, N. Y.
Vesta Gas Range & Mfg. Co., Chattanooga, Tenn.
Weir Stove Co., Taunton, Mass.

RANGES (Hotel)
Geo. M. Clark & Co. Div., Chicago, Ill.
Comstock-Castle Stove Co., Quincy, Ill.
Abram Cox Stove Co., Philadelphia, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Duparquet, Huot & Moneuse Co., 108 W. 22nd St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
Estate Stove Co., Hamilton, Ohio
The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Roberts & Mander Stove Co., Philadelphia, Pa.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Michigan Stove Co., Detroit, Mich.

REFRACTORY MATERIALS
J. H. Gautier & Co., Jersey City, N. J.
Harbison-Walker Refractories Co., Pittsburgh, Pa.
Quigley Furnace Specialties Co., 26 Cortlandt St., New York, N. Y.
Russell Engineering Co., St. Louis, Mo.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.

REGULATORS (Governors)
American Meter Co., 105 W. 40th St., New York, N. Y.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
Gas Machinery Co., Cleveland, Ohio
Isbell-Porter Co., Newark, N. J.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Reynolds Gas Regulator Co., Anderson, Ind.
Steere Engineering Co., Detroit, Mich.
Superior Meter Co., Brooklyn, N. Y.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Cleveland Rotary Meter Co., Cleveland, Ohio
The Sprague Meter Co., Bridgeport, Conn.
The Western Gas Construction Co., Fort Wayne, Ind.
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

REPAIRS (Gas Meters and Appliances)
Helme & McIlhenny, 1349 Cherry St., Philadelphia, Pa.
Maryland Meter Works, Baltimore, Md.
Superior Meter Co., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.

RETORTS
Gas Machinery Co., Cleveland, Ohio
J. H. Gautier & Co., Jersey City, N. J.
Harbison-Walker Refractories Co., Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.

RUST PREVENTATIVE
Superior Laboratories, Grand Rapids, Mich.

SCRUBBERS
Camden Iron Works, Camden, N. J.
Davis & Farnum Mfg. Co., Waltham, Mass.
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
Isbell-Porter Co., Newark, N. J.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Koppers Co., Pittsburgh, Pa.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Mfg. Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

SERVICE BOXES, CLAMPS, Etc.
Camden Iron Works, Camden, N. J.
Davis & Farnum Mfg. Co., Waltham, Mass.
General Fire Extinguisher Co., Providence, R. I.
Hays Mfg. Co., Inc., Erie, Pa.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.

SPECIALS—CAST IRON
Camden Iron Works, Camden, N. J.

STEAM TRAPS
Plant Engineering & Equipment Co., Inc., (Corliss Valve) 192 Broadway, New York, N. Y.

STILLS (Benzol, Toluol)
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
The Bartlett Hayward Co., Baltimore, Md.
The Koppers Co., Pittsburgh, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

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The Gas Age—Progressive Age Publishing Co. (52 Vanderbilt Ave., New York, N. Y.).
Gas Industry—The Periodicals Publishing Co., Inc. (Buffalo, N. Y.).
Gas Record (20 W. Jackson Blvd., Chicago, Ill.).
Int. G. Jour. of Canada—Intercolonial Gas Journal of Canada (90 Caroline St., N. Hamilton, Canada).
Acet. Jour.—Acetylene Journal (Acetylene Journal Publishing Co., Peoples Gas Bldg., Chicago, Ill.).
Natural Gas and Gasoline Journal—The Periodicals Publishing Co., Inc. (Buffalo, N. Y.).

Gas Trade Journals—English.

Gas Jour.—Gas Journal (Walter King, Publisher, 11 Bolt Court, Fleet St., London, E. C.).
The Gas World (John Allen & Co., 8 Bouverie St., London, E. C. 4).

Association Bulletins.

Bulletin B. C. G. A.—British Commercial Gas Association (47 Victoria St., Westminster, London, S. W.).
Bulletin Empire State Gas & Electric Association (29 W. 39th St., New York, N. Y.).
N. E. L. A. Bulletin—National Electric Light Association (29 W. 39th St., New York, N. Y.).
Trans. I. E. S.—Illuminating Engineering Society (29 W. 39th St., New York, N. Y.).
Jour. R. Soc. of Arts—Journal of the Royal Society of Arts (John St., Adelphi, London, W. C. 2).
A Thousand and One Uses for Gas (British Commercial Gas Association, 47 Victoria St., Westminster, London, S. W., England).

House Organs.

Advance Club News (Peoples Gas Light & Coke Co., Chicago, Ill.).
The Doherty News (Doherty Publishing Corporation, 60 Wall St., New York, N. Y.).
Gas and Electric News (Rochester Railway & Light Co., Rochester, N. Y.).
Gas Logic (Consolidated Gas Co., New York, No. 1 Madison Ave., New York, N. Y.).
Gas Service (Kings County Lighting Co., 4802 New Utrecht Ave., Brooklyn).
Pacific Service Magazine (Pacific Gas & Electric Co., San Francisco, Cal.).
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Southern Public Utilities Magazine (Charlotte, N. C.).

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Aera (American Electric Railway Association, 8 W. 40th St., New York, N. Y.).
General Electrical Review (General Electric Co., Publication Bureau, Schenectady, N. Y.).
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Sliding Scale	Editorial	Gas Jour., Jan. 6, 17

MANUFACTURE OF GAS.

B. t. u. Standard—Washington Conference (Jan. 17)	O. F. Schuette	Gas Age, Jan. 26, 83
Blue Water Gas	Editorial	Gas Age, Jan. 10, 34
Carbonization of Coal (Fuel Research Rep.)		Am. G. E. Jour., Jan. 10, 27
Carbonization, Low Temperature	H. L. Armstrong	Gas World, C. S., Jan. 3, 9
Carbonizing, Temperature Variations in	A. H. Middleton	Gas World, C. S., Jan. 3, 12
Chemist—Value in Gas Plant (A. G. A. paper)	H. Vittinghoff	Gas Age, Jan. 10, 16
Gas Combustion Chart	M. Grebel	Gas Age, Jan. 26, 97
Gas Cleaning by Electrical Precipitation	N. H. Gellert	Am. G. E. Jour., Jan. 17, 44
Gasification of Coal—Recent Developments	C. B. Tully	Gas Jour., Dec. 23, 651
Gas Making, High Cost of	L. W. Alwyn-Schmidt	Am. G. E. Jour., Jan. 31, 82
Gas Producer Reactions	J. H. Paterson	Chem. Age, Dec. 27, 740
Gas Producers with Coke Ovens	T. B. Smith	Gas World, C. S., Jan. 3, 10
Inerts and Heat Value Basis	N. H. Humphrys	Gas World, Jan. 3, 4
Non-Residual Gasification	Dr. Hugo Strache	Gas Jour., Jan. 6, 28
Purifier Installations	F. R. Parsons	Gas World, Jan. 10, 25

ARTICLE	AUTHOR	PUBLICATION
Revivification of Oxide in Situ. (A. G. A. paper)	O. B. Evans	Gas Jour., Dec. 30, 726
Steaming Retorts	N. H. Humphrys	Gas Age, Jan. 26, 65
	M. G. Welsh	Gas Age, Jan. 26, 73
Thermal Efficiency	H. W. Woodall	Gas World, Jan. 3, 3
Vertical vs. Horizontal		Am. G. E. Jour., Jan. 31, 84

MATERIALS—RAW.

Artificial Gas, Turning to		Gas Record, Jan. 14, 21
Chemist, Value of (A. G. A. paper)	E. J. Murphy	Gas Jour., Jan. 13, 80
Coal—Calorific Value and Ash	C. H. Stone	G. & E. News Roch., Dec., 97
Coal Prices, National Committee on Proposed Increase	G. W. Elliott	A. G. A. Monthly, Feb., 67
Coal, Sulphur and Ash in	A. R. M.	Gas World, Jan. 3, 5
		Gas Age, Jan. 10, 13
Coals, Misuse of High Volatile	Editorial	A. G. A. Monthly, Feb., 66
Coal, Storage of		Gas Record, Jan. 14, 36
Oil from Shale, Extraction of	H. J. Gifford	Am. G. E. Jour., Jan. 3, 7
		Nat. G. & G. Jour., Jan., 4
Oil Statistics 1919		Petroleum, Jan., 30
Peat, Gas Values of		Am. G. E. Jour., Jan. 3, 3, 6
Pulverized Fuel is Economical	W. J. Dick	Gas Jour. of Can., Jan., 11
		Am. G. E. Jour., Jan. 3, 4
Shale Carbonization	Editorial	Gas Jour., Jan. 6, 17
Sulphur in Coal	A. R. Powell	Gas Jour., Jan. 13, 79
	S. W. Parr	

NEW BUSINESS—SALES DEPARTMENT.

Advertising Cheapness of Gas	S. G. Addison	Am. G. E. Jour., Jan. 3, 14
Advertising—Educational Cards	A. Stone	Printers Ink Mo., Jan., 41
Advertising—How to Advertise		Printers Ink Mo., Jan., 16
Advertising—Newspaper Ads	J. H. Hartog	Am. G. E. Jour., Jan. 17, 54
Advertising Manager, The	G. W. Allen	Gas Age, Jan. 10, 48
Advertising—Using Movie Program	E. A. Deuch	Am. G. E. Jour., Jan. 3, 13
Advertising—What Is It?	T. L. Masson	Printers Ink Mo., Jan., 15
Appliances Sell for Profit (A. G. A. paper)	A. P. Post	Gas Age, Jan. 10, 50
Coke Sales, Domestic Consumers		Gas Age, Jan. 10, 14
Competition in Selling	S. G. Addison	Am. G. E. Jour., Jan. 31, 89
Gas and Appliance Sales, Valley Periods in		A. G. A. Monthly, Feb., 104
Gas Fixtures, Period Styles	F. A. Driscoll	Am. G. E. Jour., Jan. 10, 33
Gas Publicity Disseminated		A. G. A. Monthly, Feb., 94
Light Used for Selling Goods	J. E. Bullard	Am. G. E. Jour., Jan. 24, 61, 67
Lighting Campaign, New England	L. B. Michaels	Am. G. E. Jour., Jan. 31, 94
Nailing Every Lie Printed		A. G. A. Monthly, Feb., 96
Office Management	L. Galloway	Nat. G. & G. Jour., Dec., 424
Sales Up—Expenses Down	E. MacLean	Gas Age, Jan. 10, 46
Selling Lighting Effects	M. Luckiesh	Elec. Merch., Oct., 183
Two Copy Writers—Wilson, Garfield		A. G. A. Monthly, Feb., 98
Window Display	W. B. Stoddard	Am. G. E. Jour., Jan. 24, 70
		A. G. A. Monthly, Feb., 101

UTILIZATION OF GAS.

Appliances, Inspection of (Worcester, Mass.)	C. E. Paige	Am. G. E. Jour., Jan. 17, 16
Ashphalt, Gas Fuel Efficiency		Am. G. E. Jour., Jan. 3, 17
Bibliography of Gas Literature		A. G. A. Monthly, Feb., 138
Biscuit Baking by Gas		Gas World, Jan. 17, 46
Brass Foundry Consumption		Gas Age, Jan. 10, 55
Brass Melting in Gas Furnaces	E. F. Davis	Gas Age, Jan. 26, 90
Cafeteria in Factories	W. J. Armstrong	Pac. Ser. Mag., Dec., 218
Church Lighting	J. E. Bullard	Am. G. E. Jour., Jan. 10, 21
Computation of Lighting Data	J. G. Clark	Gas Jour., Dec. 23, 654
Gas Burning Devices, Great Possibilities in		A. G. A. Monthly, Feb., 123
Gas Engine Fuel (A. G. A. paper)	H. L. Doherty	Gas Jour., Dec. 30, 725
Gas Engine Troubles	L. Aitchison	A. S. M. E. Jour., Jan., 59
Gas Forms Efficient Core Oven Fuel	W. A. Ehlers	A. G. A. Monthly, Feb., 105
Gas Furnaces in a Metal Foundry		Gas Jour., Jan. 6, 27
Gas Furnace Installations	H. R. Hems	Gas World, Dec. 27, 518
		Gas Jour., Dec. 30, 722
Gas Heating Radiation vs. Convection	Editorial	Gas World, Jan. 3, 2
	J. H. Brearley	Gas World, Jan. 3, 5
Gas Heats Clothes Washer		Nat. G. & G. Jour., Dec., 416
Gas in Bronzing Processes	G. C. Shadwell	Am. G. E. Jour., Jan. 24, 63
Gas Tubing, Danger in Cheap		Gas Jour. of Can., Jan., 16
Gas vs. Electricity—Tests	C. W. Pierson	Gas Age, Jan. 10, 53
Hospital and College Installations	J. E. Philpott	Gas Jour. of Can., Jan., 9
House Heating—Electricity's Use Condemned (P. S. C. Idaho)	G. E. Erb	N. E. L. A. Bul., Jan., 11
Housing Schemes, Government (Comm. Report)	B. M. Fernald, Chmn.	Jour. Inst. Archts., Jan. Supplement
Hvid Engine and Fuel Problem	E. B. Blakely	A. S. M. E. Jour., Dec., 918
Industrial Gas Consumers	L. W. Alwyn-Schmidt	Am. G. E. Jour., Jan. 17, 41
Industrial Gas—Large Increase		Pub. Ser. Lumen, Jan., 4
Industrial Lighting	J. G. Clark	Gas World, Dec. 27, 516
Lighting Cinema Halls	L. Gaster	Ill. Eng'r., Oct., 282, 290

ARTICLE	AUTHOR	PUBLICATION
Lighting, Development of Factory	G. C. Ward	Safety Eng'g., Dec., 320
Lighting, Psychology of	H. A. Wagner	G. & E. News, Balt., Jan., 65
Lighting the Home (I. E. S. paper)	A. L. Powell R. E. Harrington	Trans. I. E. S., Nov. 20, 394
Lighting—Undeveloped Fields	R. M. Searle	G. & E. News, Roch., Nov., 77 Elec. World, Dec. 13, 1070
Motor Vehicles, Producer Gas for	D. J. Smith	Gas World, Jan. 10, 30 Gas World, Jan. 17, 45
Progress Report, Gas (Comm. I. E. S.)	F. E. Cady, Chmn.	Trans. I. E. S., Nov. 20, 316
Street Lighting and Traffic Accidents	W. Harrison	Ill. Eng'r., Oct., 286

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CLASSIFIED DIRECTORY-MAUFACTURERS OF GAS EQUIPMENT

(Continued from page 207)

STOVES (Confectioners, Laundry, Tailor)

A-B Stove Co., Battle Creek, Mich.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
The General Gas Appliance Co., 103 Park Ave., Brooklyn, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

STRAINERS

Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.

STRUCTURAL STEEL WORKS (See Holders)

TANKS (Ammonia, Oil, Water)

Camden Iron Works, Camden, N. J.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Machinery Co., Cleveland, Ohio
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Mfg. Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

THERMOMETERS

American Meter Co., 105 W. 40th St., New York, N. Y.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
General Fire Extinguisher Co., Providence, R. I.
Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.

THERMOSTATS

Gas Machinery Co., Cleveland, Ohio
Kidde & Co., 169 Chambers St., New York, N. Y.
Minneapolis Heat Regulator Co., Minneapolis, Minn.
B. Ryan & Co., 60 E. 10th St., New York, N. Y.
The Bryant Heater & Mfg. Co., Cleveland, Ohio

THERMO VALVES

Pittsburgh Water Heater Co., Pittsburgh, Pa.

THORIUM

Welsbach Co., Gloucester, N. J.

TRENCH WORK

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.

TURBINE (Steam)

L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

VALVES

Claus Automatic Gas Cock Co., Milwaukee, Wis.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
General Fire Extinguisher Co., Providence, R. I.
Isbell-Porter Co., Newark, N. J.
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Stacey Mfg. Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

VALVES (Needle Valves for Gas Stoves)

The Roberts Brass Mfg. Co., Detroit, Mich.

WATER HEATERS

A-B Stove Co., Battle Creek, Mich.
Bartlett & Co., Inc., Philadelphia, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Abram Cox Stove Co., Philadelphia, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.
Estate Stove Co., Hamilton, Ohio
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Humphrey Co., Kalamazoo, Mich.
Kidde & Co., 169 Chambers St., New York, N. Y.
Lawson Mfg. Co., Pittsburgh, Pa.
The Kompak Co., New Brunswick, N. J.
New Process Stove Co. Div., Cleveland, Ohio.
Peninsular Stove Co., Detroit, Mich.
Philadelphia Stove Co., Philadelphia, Pa.
Pittsburgh Water Heater Co., Pittsburgh, Pa.
Rathbone, Sard & Co., Albany, N. Y.
Reliable Sove Co. Div., Cleveland, Ohio
Ruud Mfg. Co., Pittsburgh, Pa.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Cleveland Heater Co., Cleveland, Ohio
The Hoffman Heater Co., Lorain, Ohio
The Lovekin Water Heater Co., 39 Laurel St., Philadelphia, Pa.
The Michigan Stove Co., Detroit, Mich.

WATER STILLS (Gas Heated)

The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
Young Bros. Co., Detroit, Mich.

WELDED STEEL PIPE

The Bartlett Hayward Co., Baltimore, Md.
Steere Engineering Co., Detroit, Mich.

Employment Bureau

SERVICES REQUIRED

SALESMAN—A man who can push sales of new appliances and also work for the increased sales per meter where appliances are already installed. Apply to Chas. Otten, Jr., Manager, Plymouth Gas Light Company, Plymouth, Mass.
Key No. 3

WATER GAS—Experienced water gas maker wanted Gas Works vicinity of New York. Address—American Gas Association, 130 East Fifteenth Street, New York, N. Y.
Key No. 4

METERS: METER REPAIRER—One who is experienced in meter work. Works in large city in New York. Address reply to A. G. A.
Key No. 5

SERVICES OFFERED

WANTED—Position as manager in city of 60,000 or over by college graduate of 16 years connection with gas business. A successful record as manager of 2 gas companies, and as superintendent of one of the largest gas plants in U. S. Has had practical experience in every branch of the business and has made good. Address American Gas Association.
Key No. 102

WANTED—Position as gas engineer or manager by a man of large experience in both capacities in manufacture and distribution of coal or water gas. 38 years of age with excellent references. Address—American Gas Association, 130 East 15th Street.
Key No. 103.

WANTED—Young man desires a position with opportunities. Present location 5 years and cannot go higher. Thoroughly trained and experienced in water gas operation. New business and management. Address—American Gas Asscia-tion.
Key No. 104

WANTED—Position as superintendent of a company of moderate size, age 29. Technical graduate—experience—assistant superintendent of large coal and water gas plant. Distribution and industrial appliance work. Address American Gas Association.
Key No. 105

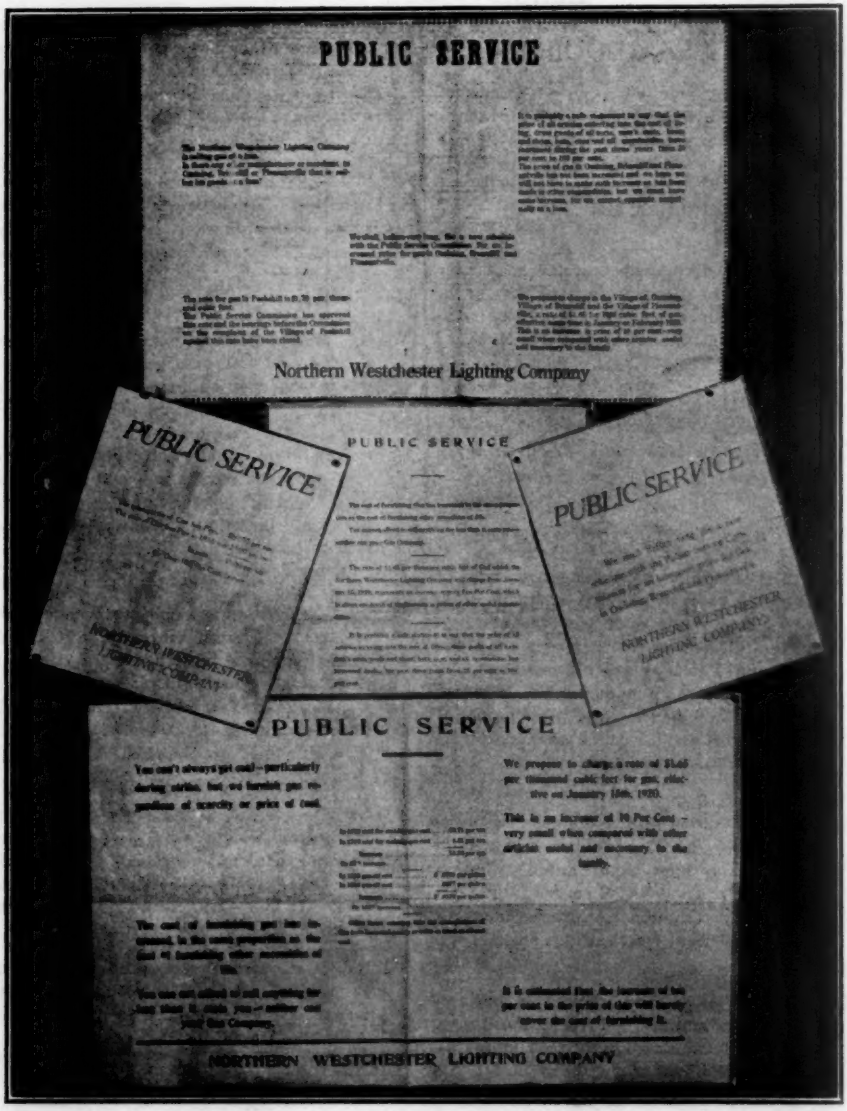
WANTED—Young man 32, experienced manager and office manager desires position with a combination company. Salary $250.00 per month. Address—American Gas Association.
Key No. 106

WANTED—Position as general manager of a large company or of several companies where organization and management is necessary. Have had an extensive experience in the business in all its branches as an organizer, builder and manager. Have had excelleut results in dealing with the public and in popularizing the companies under my direction. Address—American Gas Association.
Key No. 107

WANTED—Position as superintendent wanted by technical man, married, 30 years of age, experienced in manufacture of water gas and high and low pressure distribution. Can furnish best of references. Address—American Gas Association, 130 East Fifteenth St., New York, N. Y.
Key No. 108

WANTED—Position as Manager or Assistant in medium size town. Has had 15 years experience in coal and water gas and electric operation. Technical graduate. Any location. Address—American Gas Association.
Key No. 109.

WANTED—General Foreman to take charge of small gas plant in New York State. Permanent position. Salary $200 per month. Address—American Gas Association.
Key No. 110.


PUBLIC SERVICE
Northern Westchester Lighting Company
PUBLIC SERVICE
PUBLIC SERVICE
PUBLIC SERVICE
PUBLIC SERVICE
You can't always get coal—particularly during strikes, but we furnish gas regardless of scarcity or price of coal.
We propose to charge a rate of $1.60 per thousand cubic feet for gas, effective on January 15th, 1920.
This is an increase of 10 Per Cent — very small when compared with other articles useful and necessary in the family.
It is estimated that the increase of ten per cent in the price of this will barely cover the cost of furnishing it.
NORTHERN WESTCHESTER LIGHTING COMPANY

Five advertisements used by the Northern Westchester Lighting Company in announcing to the public an increase in its gas service.

AMERICAN GAS ASSOCIATION, INC.

HEADQUARTERS 130 EAST 15TH ST., NEW YORK, N. Y.

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ASS'T TREASURER	HENRY M. BRUNDAGE	New York, N. Y.